HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL

BA-6 CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION	CHASSIS NO.
☛ KV-27FA310	RM-Y180	US	SCC-S61U-A
☛ KV-27FA310	RM-Y180	CANADA	SCC-S59Q-A
KV-27FS120	RM-Y195	US	SCC-S61N-A
KV-27FS120	RM-Y195	CANADA	SCC-S59J-A
KV-29FA310	RM-Y180	LATIN NORTH	SCC-S60V-A
KV-29FA310	RM-Y180	LATIN SOUTH	SCC-S60W-A
KV-29FS120	RM-Y195	LATIN NORTH	SCC-S73D-A
KV-29FS120	RM-Y195	LATIN SOUTH	SCC-S73E-A

ORIGINAL MANUAL ISSUE DATE: 3/2004

☛ **:UPDATED ITEM**

REVISION DATE	SUBJECT
3/2004	No revisions or updates are applicable at this time.
8/2004	Reissue entire manual Added KV-27FA310 model for US and Canada

TRINITRON® COLOR TELEVISION

SONY®

9-965-960-02

Self Diagnosis Supported model

SERVICE MANUAL

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☛ KV-27FA310	RM-Y180	US	SCC-S61U-A
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KV-27FS120	RM-Y195	CANADA	SCC-S59J-A
KV-29FA310	RM-Y180	LATIN NORTH	SCC-S60V-A
KV-29FA310	RM-Y180	LATIN SOUTH	SCC-S60W-A
KV-29FS120	RM-Y195	LATIN NORTH	SCC-S73D-A
KV-29FS120	RM-Y195	LATIN SOUTH	SCC-S73E-A

KV-27FS120

KV-29FA310

TRINITRON® COLOR TELEVISION

SONY®

9-965-960-02

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SPECIFICATIONS

	KV-27FS120	KV-29FS120 (L. NORTH)	KV-29FS120 (L. SOUTH)	KV-27FA310 & KV-29FA320 (L. NORTH)	KV-29FA320 (L. SOUTH)
Power Requirements	120V, 60Hz		220V, 50/60Hz	120V, 60Hz	220V, 50/60Hz
Number of Inputs/Outputs					
Video [1]	3			3	
S Video [2]	1			1	
Y,P_B, P_R [3]	1			1	
Audio [4]	2			2	
Speaker Output (W)	10W x 2			7W x 3	
Subwoofer	N/A			20W	
Power Consumption (W)					
In Use (Max)	180W		175W	220W	215W
In Standby (Max) [5]	1W		1W	1W	1W
Dimensions (W x H x D)					
mm	768 x 589 x 497 mm			784 x 678 x 520.5 mm	
in	30 1/4 x 23 1/4 x 19 5/8 in			30 7/8 x 26 3/4 x 20 1/2 in	
Mass					
kg	45.2 kg			50 kg	
lbs	99 lbs 10 oz			110 lbs 4 oz	

Television system
American TV standard, NTSC

Channel coverage
VHF: 2-13/ UHF: 14-69/ CATV: 1-125

Picture tube
FD Trinitron® tube

Visible screen size
27-inch picture measured diagonally

Actual screen size
29-inch measured diagonally

Supplied Accessories
Remote Commander RM-Y195
(All Except KV-27FA310/29FA310 Only)
Remote Commander RM-Y180
(KV-27FA310/29FA310 Only)
Two Size AA (R6) Batteries

1) 1 Vp-p 75 ohms unbalanced, sync negative
2) Y: 1 Vp-p 75 ohms unbalanced, sync negative
C: 0.286 Vp-p (Burst signal), 75 ohms
3) Y: 1.0 Vp-p, 75 ohms, sync negative; PB: 0.7 Vp-p, 75 ohms;
PR Vp-p, 75 ohms.
4) 500 mVrms (100% modulation), Impedance: 47 kilohms
5) This specification is the maximum wattage.

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SRS (SOUND RETRIEVAL SYSTEM)

The SRS (SOUND RETRIEVAL SYSTEM) is manufactured by Sony Corporation under license from SRS Labs, Inc. It is covered by U.S. Patent No. 4,748,669. Other U.S. and foreign patents pending.

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Design and specifications are subject to change without notice.

WARNINGS AND CAUTIONS

CAUTION

Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield, or carbon painted on the CRT, after removing the anode.

WARNING!!

An isolation transformer should be used during any service to avoid possible shock hazard, because of live chassis. The chassis of this receiver is directly connected to the AC power line.

⚠ SAFETY-RELATED COMPONENT WARNING!!

Components identified by shading and ⚠ mark on the schematic diagrams, exploded views, and in the parts list are critical for safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in supplements published by Sony. Circuit adjustments that are critical for safe operation are identified in this manual. Follow these procedures whenever critical components are replaced or improper operation is suspected.

ATTENTION!!

Apres avoir deconnecte le cap de l'anode, court-circuiter l'anode du tube cathodique et celui de l'anode du cap au chassis metallique de l'appareil, ou la couche de carbone peinte sur le tube cathodique ou au blindage du tube cathodique.

Afin d'eviter tout risque d'electrocution provenant d'un châssis sous tension, un transformateur d'isolement doit etre utilisé lors de tout dépannage. Le châssis de ce récepteur est directement raccordé à l'alimentation du secteur.

⚠ ATTENTION AUX COMPOSANTS RELATIFS A LA SECURITE!!

Les composants identifies par une trame et par une marque ⚠ sur les schemas de principe, les vues explosees et les listes de pieces sont d'une importance critique pour la securite du fonctionnement. Ne les remplacer que par des composants Sony dont le numero de piece est indique dans le present manuel ou dans des supplements publies par Sony. Les reglages de circuit dont l'importance est critique pour la securite du fonctionnement sont identifies dans le present manuel. Suivre ces procedures lors de chaque remplacement de composants critiques, ou lorsqu'un mauvais fonctionnement suspecte.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are “pinched” or touching high-wattage resistors.

3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.

4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.

7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.

8. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instructions.

2. A battery-operated AC milliampmeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson’s 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble- light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

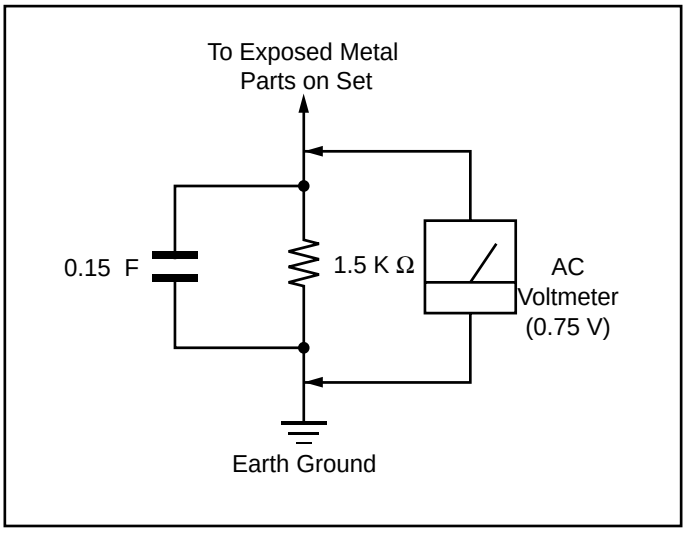


Figure A. Using an AC voltmeter to check AC leakage.

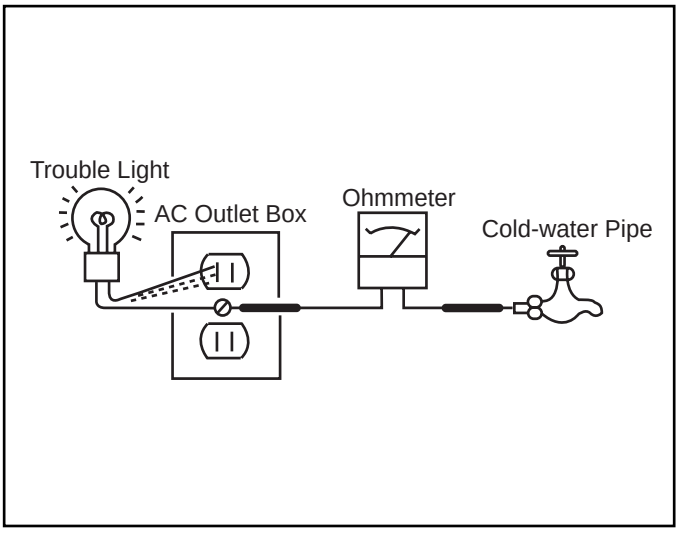


Figure B. Checking for earth ground.

SELF-DIAGNOSTIC FUNCTION

Self Diagnosis Supported model

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER LED flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the Remote Commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

Diagnostic Test Indicators

When an error occurs, the STANDBY/TIMER LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.

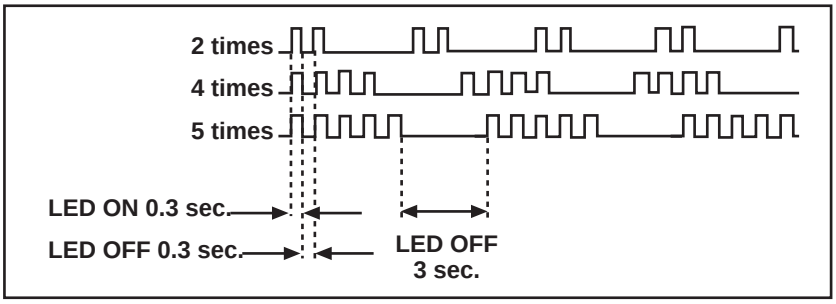
Results for all of the following diagnostic items are displayed on screen. No error has occurred if the screen displays a "0".

Diagnostic Item Description	No. of times STANDBY/ TIMER lamp flashes	Self-Diagnositc Display/ Diagnostic Result	Probable Cause Location	Detected Symptoms
Power does not turn on	Does not light	————	• Power cord is not plugged in. • Fuse is burned out (F601). (A Board)	• Power does not come on. • No power is supplied to the TV. • AC Power supply is faulty.
+B overcurrent (OCP)*	2 times	2:0 or 2:1	• H.OUT (Q505) is shorted. (A Board) • IC2751 is shorted. (CW Board)	• Power does not come on. • Load on power line is shorted.
I-Prot	4 times	4:0 or 4:1	• +13V is not supplied. (A Board) • IC545 is faulty. (A Board)	• Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is stopped.
IK (AKB)	5 times	5:0 or 5:1	• IC001 is faulty. (A Board) • Screen (G2) is improperly adjusted.**	• No raster is generated. • CRT Cathode current detection reference pulse output is small.

*If a +B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the mircrocontroller is displayed on the screen.

**Refer to Screen (G2) Adjustments in Section 2-4. of this manual.

Display of Standby/Timer LED Flash Count



Diagnostic Item	Flash Count*
+B Overcurrent	2 times
I-Prot	4 times
IK (AKB)	5 times

*One flash count is not used for self-diagnostic.

Stopping the Standby/Timer LED Flash

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER LAMP from flashing.

Self-Diagnostic Screen Display

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure on the screen for confirmation.

To Bring Up Screen Test

In standby mode, press buttons on the Remote Commander sequentially, in rapid succession, as shown below:

[Display] ➡ Channel [5] ➡ Sound Volume [-] ➡ Power ON

⇧ Note that this differs from entering the Service Mode (Sound Volume [+]).

Self-Diagnostic Screen Display

SELF DIAGNOSTIC		
2:	+B OCP	0
3:	+B OVP	N/A
4:	VSTOP	0
5:	AKB	1
101:	WDT	N/A

Numeral “0” means that no fault was detected.

Numeral “1” means a fault was detected one time only.

Handling of Self-Diagnostic Screen Display

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

Clearing the Result Display

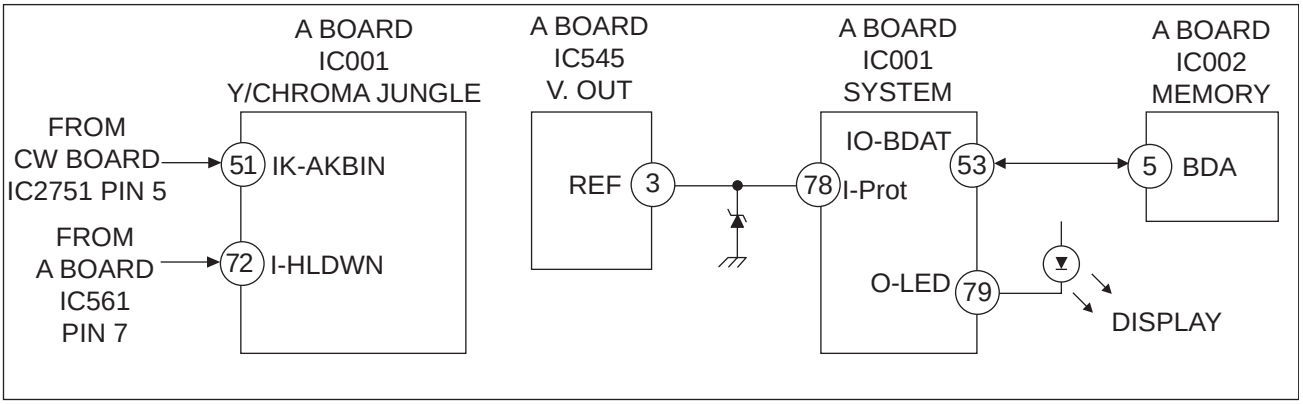
To clear the result display to “0”, press buttons on the Remote Commander sequentially when the diagnostic screen is displayed, as shown below:

Channel [8] ➡ [ENTER]

Quitting the Self-Diagnostic Screen

To quit the entire self-diagnostic screen, turn off the power switch on the Remote Commander or the main unit.

Self-Diagnostic Circuit



+B overcurrent (OCP)

Occurs when an overcurrent on the +B (135V) line is detected by pin 72 of IC001 (A Board). If the voltage of pin 72 of IC001 (A Board) is less than 1V when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.

I-Prot

Occurs when an absence of the vertical deflection pulse is detected by pin 78 of IC001 (A Board). Power supply will shut down when waveform interval exceeds 2 seconds.

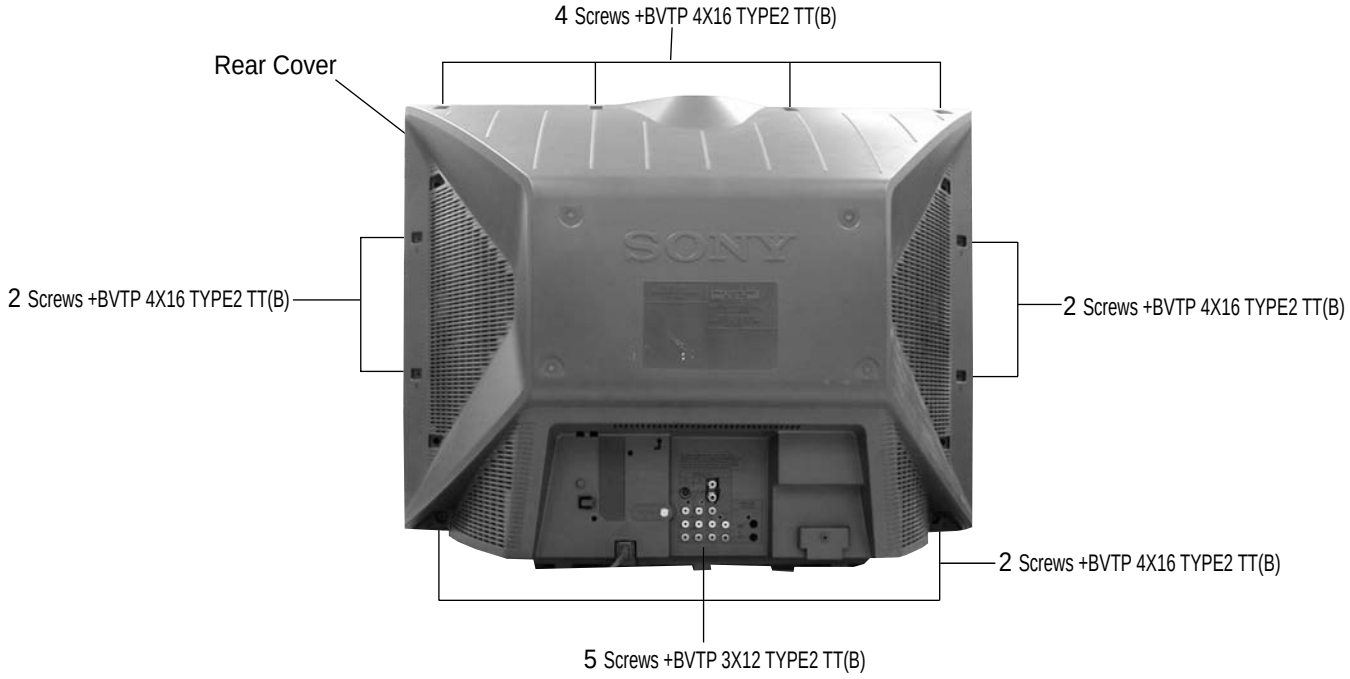
IK (AKB)

If the RGB levels* do not balance within 2 seconds after the power is turned on, this error will be detected by IC001 (A Board). TV will stay on, but there will be no picture.

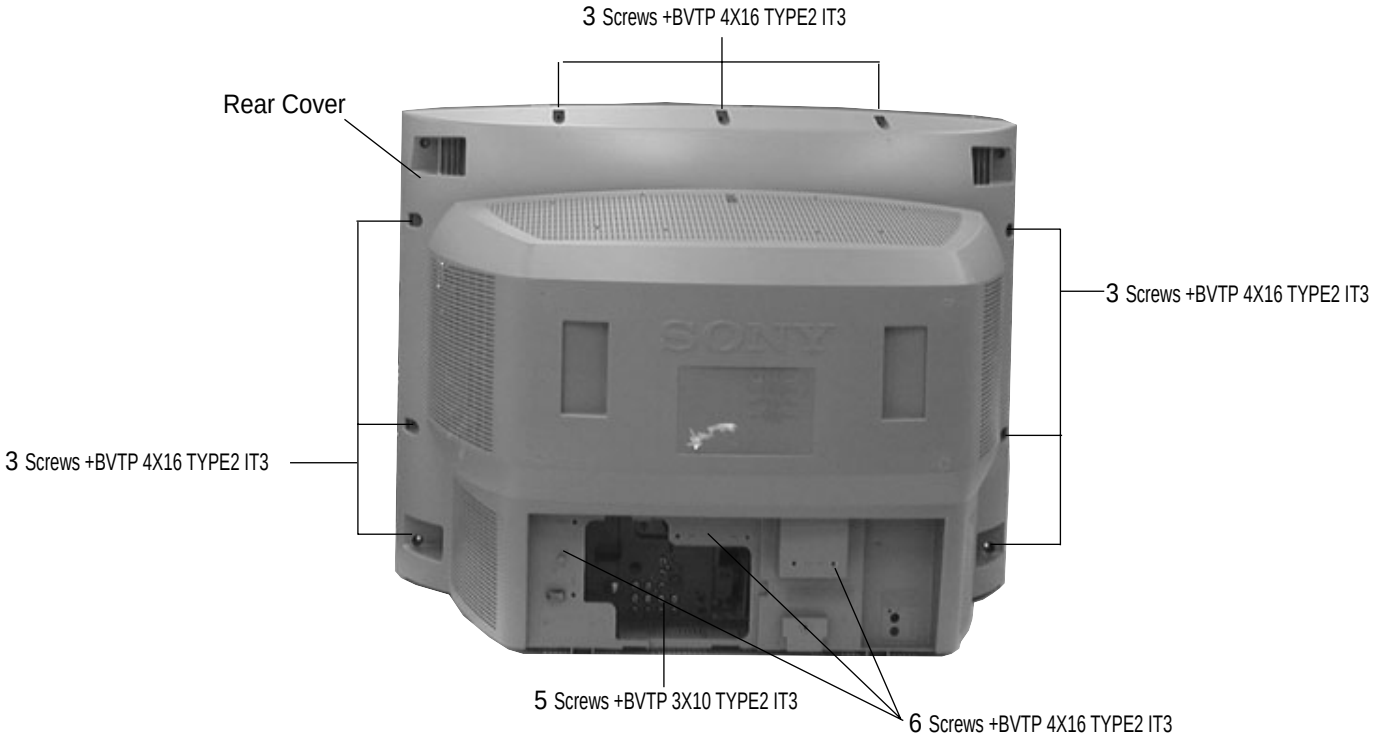
*(Refers to the RGB levels of the AKB detection Ref pulse that detects 1K).

SECTION 1: DISASSEMBLY

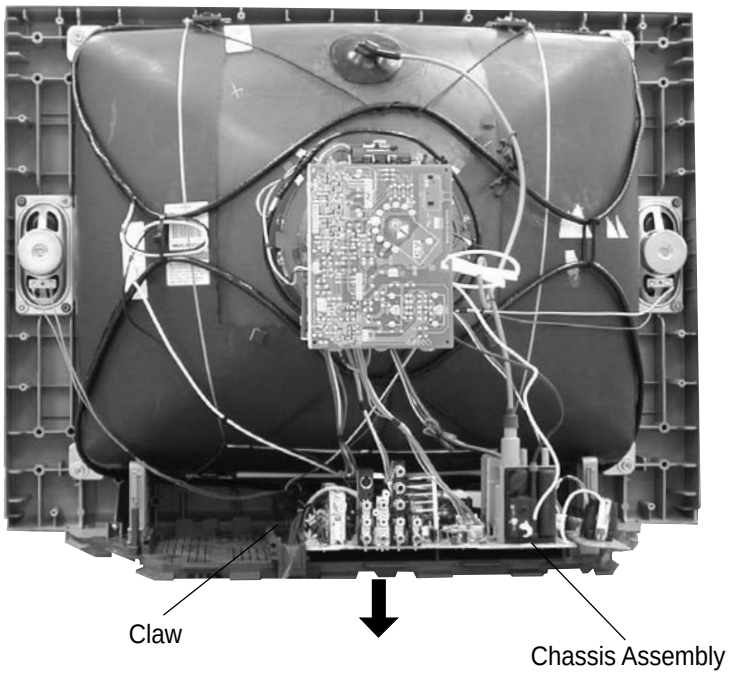
1-1. REAR COVER REMOVAL (ALL EXCEPT KV-27FA310/29FA310)


4 Screws +BVTP 4X16 TYPE2 TT(B)
Rear Cover
2 Screws +BVTP 4X16 TYPE2 TT(B)
2 Screws +BVTP 4X16 TYPE2 TT(B)
2 Screws +BVTP 4X16 TYPE2 TT(B)
5 Screws +BVTP 3X12 TYPE2 TT(B)

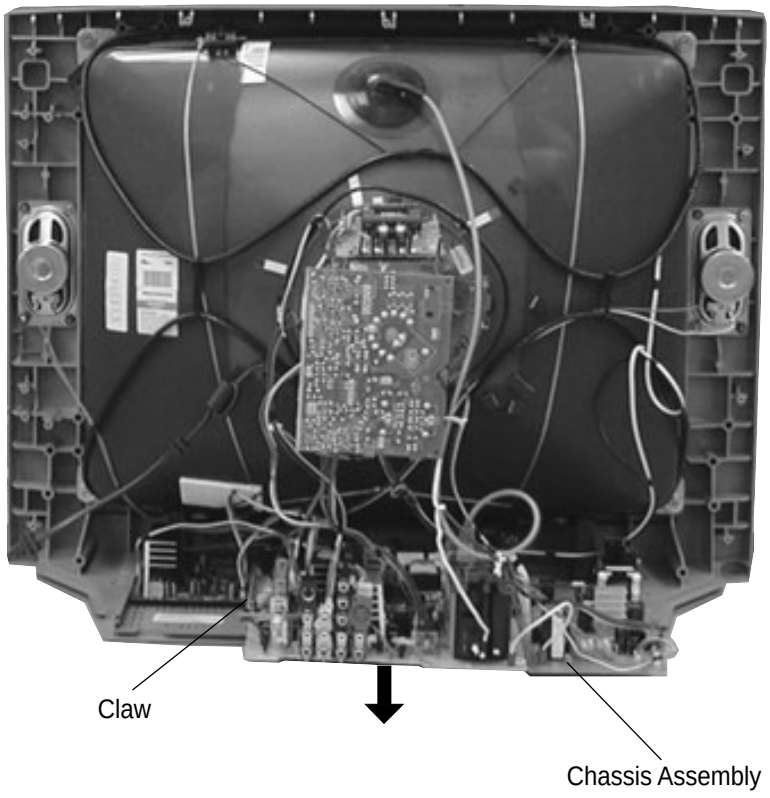
1-2. REAR COVER REMOVAL (KV-27FA310/29FA310 ONLY)


3 Screws +BVTP 4X16 TYPE2 IT3
Rear Cover
3 Screws +BVTP 4X16 TYPE2 IT3
3 Screws +BVTP 4X16 TYPE2 IT3
5 Screws +BVTP 3X10 TYPE2 IT3
6 Screws +BVTP 4X16 TYPE2 IT3

1-3. CHASSIS ASSEMBLY REMOVAL (ALL EXCEPT KV-27FA310/29FA310)



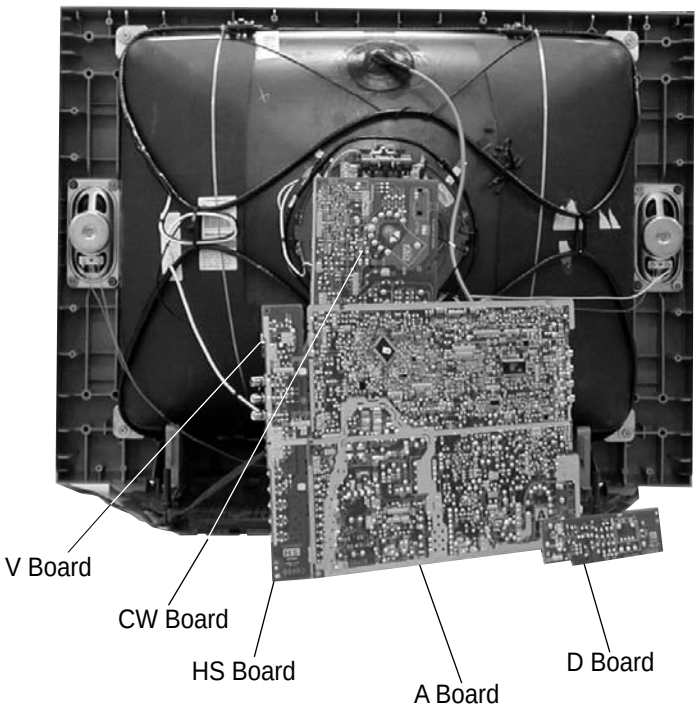
1-4. CHASSIS ASSEMBLY REMOVAL (KV-27FA310/29FA310 ONLY)



1-5. SERVICE POSITION (ALL EXCEPT KV-27FA310/29FA310)

① Press on catch tab to release A Board.

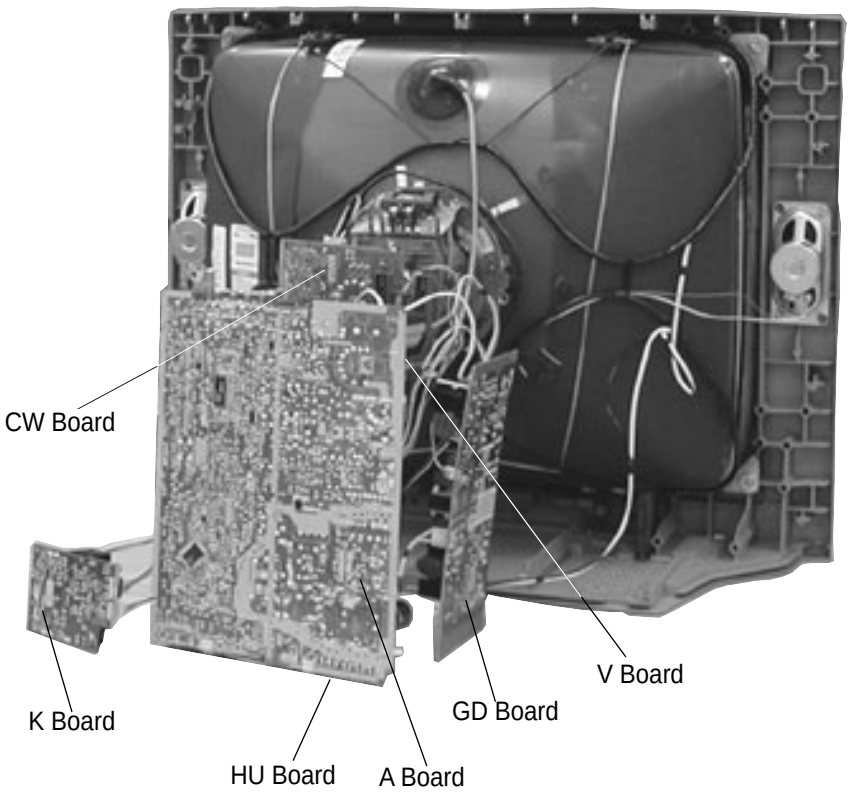
② Disconnect cables as needed to allow A Board to be removed.



1-6. SERVICE POSITION (KV-27FA310/29FA310 ONLY)

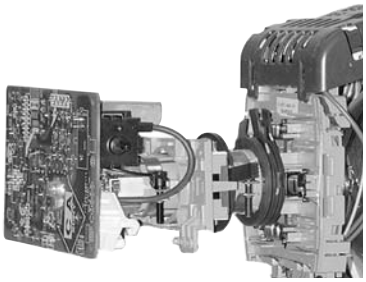
① Press on catch tab to release A Board.

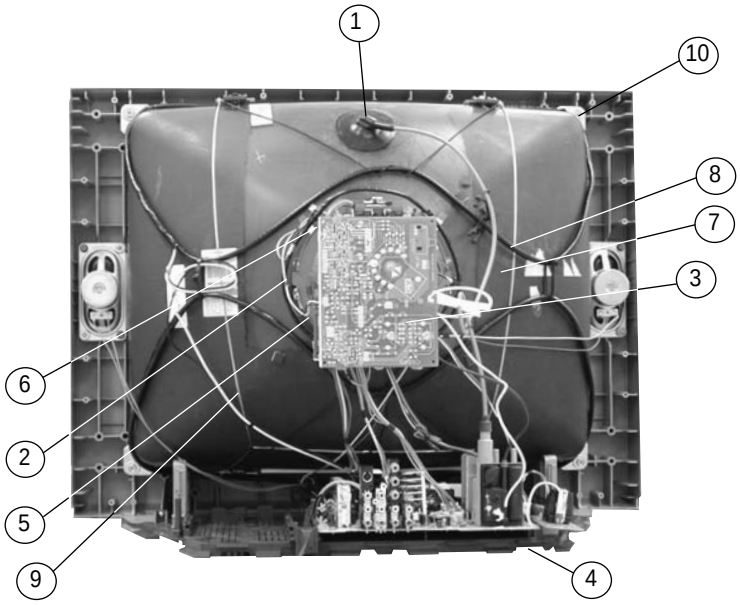
② Disconnect cables as needed to allow A Board to be removed.



1-7. PICTURE TUBE REMOVAL

WARNING: BEFORE REMOVING THE ANODE CAP
High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT before attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.



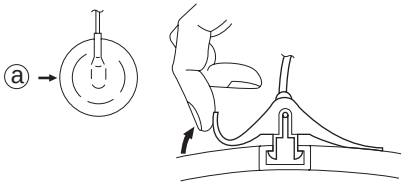


1. Discharge the anode of the CRT and remove the anode cap.
2. Unplug all interconnecting leads from the deflection yoke, neck assembly, degaussing coils and CRT grounding strap.
3. Remove the CW Board from the CRT.
4. Remove the chassis assembly.
5. Loosen the neck assembly fixing screw and remove.
6. Loosen the deflection yoke fixing screw and remove.
7. Place the set with the CRT face down on a cushion and remove the degaussing coil holders.
8. Remove the degaussing coils.
9. Remove the CRT grounding strap and spring tension devices.
10. Unscrew the four CRT fixing screws [located on each CRT corner] and remove the CRT [Take care not to handle the CRT by the neck].

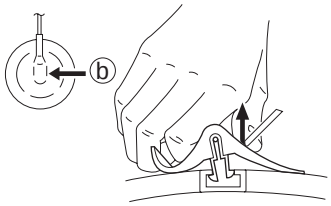
ANODE CAP REMOVAL PROCEDURE

WARNING: High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT **before** attempting to remove the anode cap. Short between anode and coated earth ground strap of CRT.
NOTE: After removing the anode cap, short circuit the anode of the picture tube and the anode cap to either the metal chassis, CRT shield, or carbon painted on the CRT.

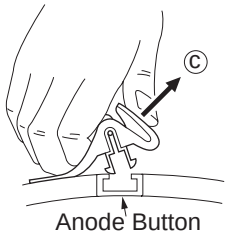
REMOVAL PROCEDURES



Turn up one side of the rubber cap in the direction indicated by arrow ⓐ .



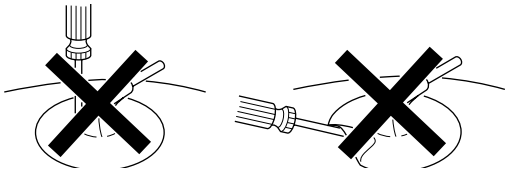
Use your thumb to pull the rubber cap firmly in the direction indicated by arrow ⓑ .



When one side of the rubber cap separates from the anode button, the anode cap can be removed by turning the rubber cap and pulling it in the direction of arrow ⓒ .

HOW TO HANDLE AN ANODE CAP

1. Do not use sharp objects which may cause damage to the surface of the anode cap.
2. To avoid damaging the anode cap, do not squeeze the rubber covering too hard. A material fitting called a shatter-hook terminal is built into the rubber.
3. Do not force turn the foot of the rubber cover. This may cause the shatter-hook terminal to protrude and damage the rubber.



SECTION 2: SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

These adjustments should be performed with rated power supply voltage unless otherwise noted.

Set the controls as follows unless otherwise noted:
VIDEO MODE: Pro
PICTURE CONTROL: Normal
BRIGHTNESS CONTROL: Normal

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G2)
5. White Balance

Note Test Equipment Required:

1. Color Bar Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital Multimeter

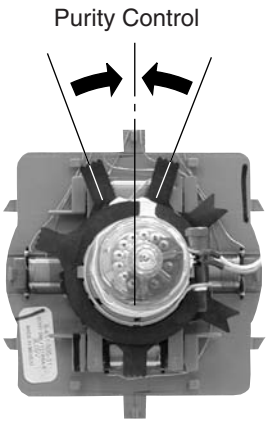
2-1. BEAM LANDING

Before beginning adjustment procedure:

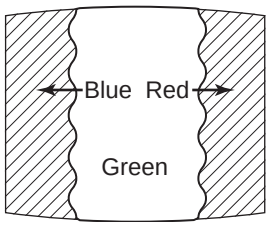
1. Feed in the white pattern signal.

Adjustment Procedure

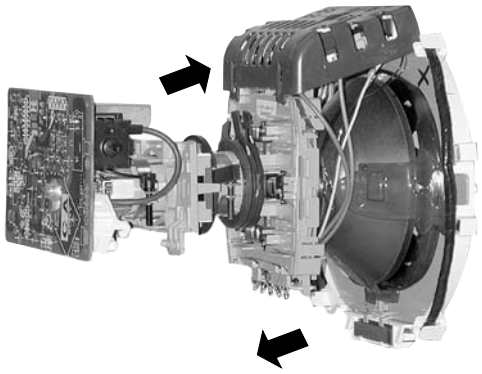
1. Input a raster signal with the pattern generator.
2. Loosen the deflection yoke mounting screw, and set the purity control to the center as shown below:

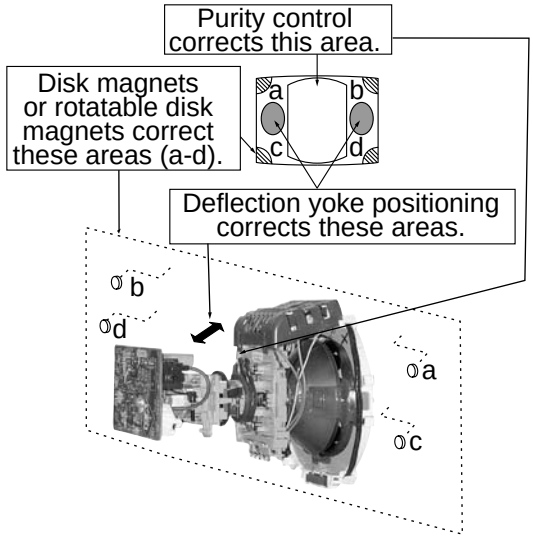


3. Turn the raster signal of the pattern generator to green.
4. Move the deflection yoke backward, and adjust with the purity control so that green is in the center and red and blue are even on both sides.



5. Move the deflection yoke forward, and adjust so that the entire screen becomes green.
6. Switch over the raster signal to red and blue and confirm the condition.
7. When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw.
8. If landing at the corner is not right, adjust by using the disk magnets.





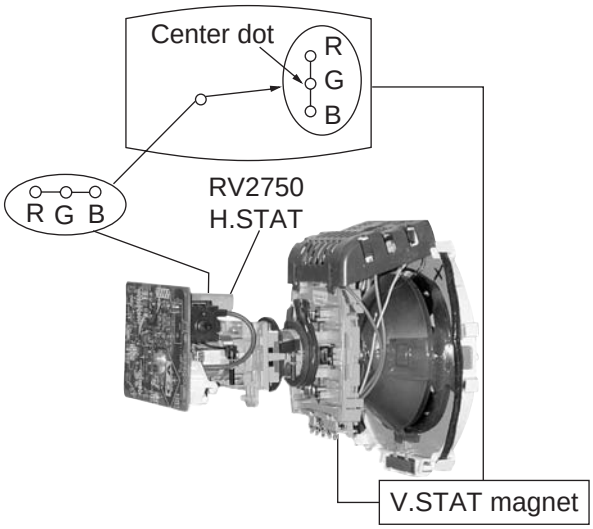
2-2. CONVERGENCE

Before starting convergence adjustments:

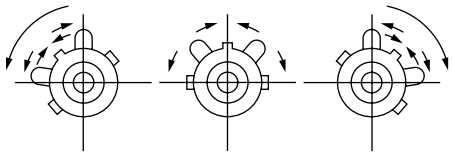
1 Perform FOCUS, VLIN and VSIZE adjustments.
2. Set BRIGHTNESS control to minimum.
3. Feed in dot pattern.

Vertical Static Convergence

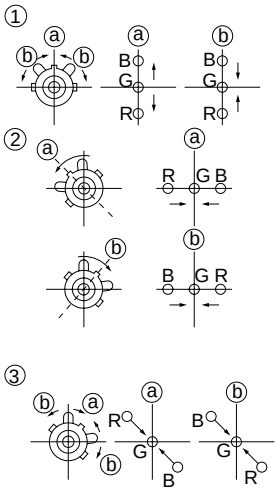
1. Adjust V. STAT magnet to converge red, green and blue dots in the center of the screen.



2. Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



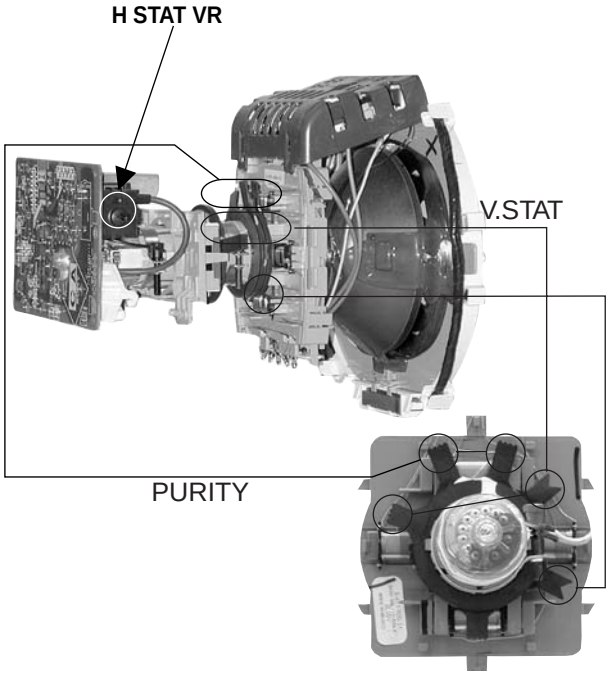
When the V. STAT magnet is moved in the direction of arrow a and b, red, green, and blue dots move as shown below:



Horizontal Static Convergence

If the blue dot does not converge with the red and green dots, perform the following:

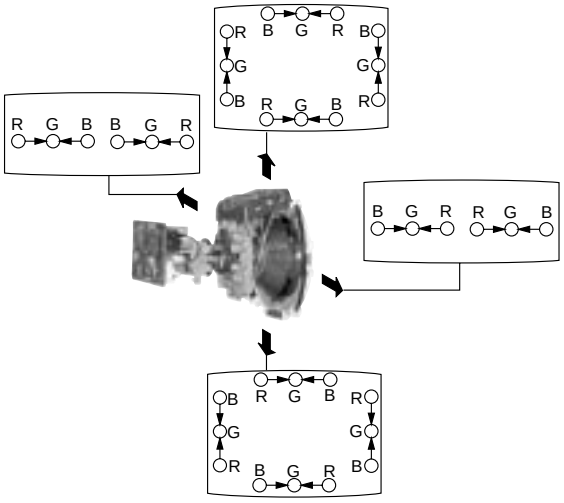
1. Move H STAT VR magnet (a) to correct insufficient H.Static convergence.



Dynamic Convergence Adjustment

Before performing this adjustment, perform Horizontal and Vertical Static Convergence Adjustment.

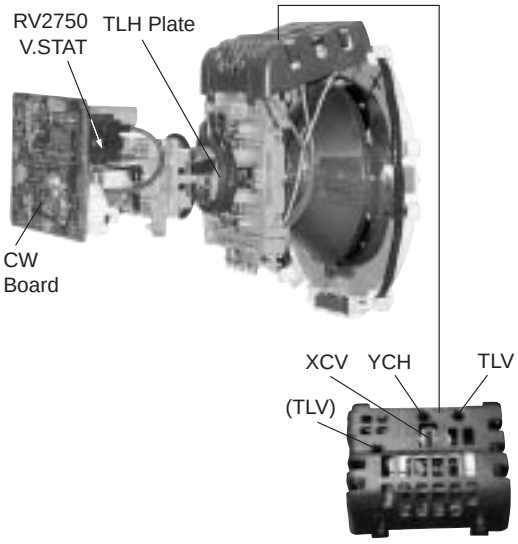
1. Slightly loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown below:

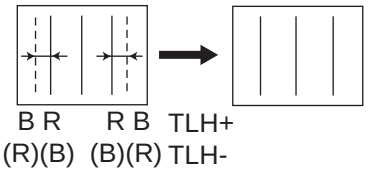


4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

TLH Plate Adjustment

1. Input crosshatch pattern.
2. Adjust PICTURE QUALITY to standard, PICTURE and BRIGHTNESS to 50%, and OTHER to standard.
3 Adjust the Horizontal Convergence of red and blue dots by tilting the TLH plate on the deflection yoke.

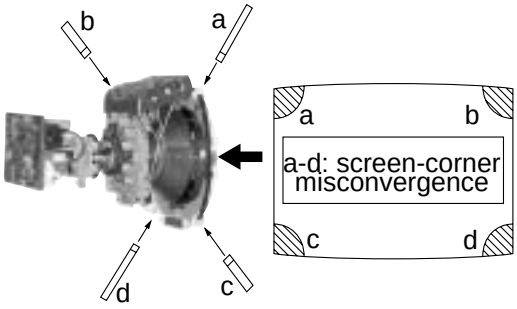




4. Adjust XCV core to balance X axis.
5. Adjust YCH VR to balance Y axis.
6. Adjust vertical red and blue convergence with V.TILT (TLV VR.)
   Note: Perform adjustment 3-6 while tracking items 1 and 2.

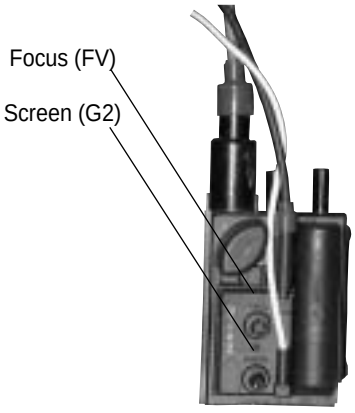
Screen-Corner Convergence

1. Affix a permalloy assembly corresponding to the misconverged areas:



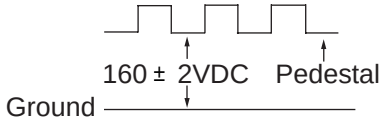
2-3. FOCUS

1. Adjust FOCUS control for best pictures.



2-4. SCREEN (G2)

1. Input a dot pattern.
2. Set the PICTURE and BRIGHTNESS controls at minimum and COLOR control at normal.
3. Adjust SBRT, GCUT, BCUT in service mode with an oscilloscope as shown below so that voltages on the red, green, and blue cathodes are 160 ± 2VDC.



4. Observe the screen and adjust SCREEN (G2) VR in FBT to obtain the faintly visible background of dot signal.

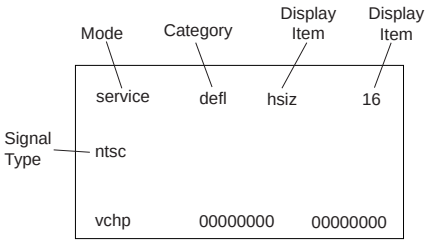
2-5. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

Service Mode Procedure

1. Standby mode (power off).
2. Press [Display] ➡ Channel [5] ➡ Sound Volume [+] ➡ Power on the Remote Commander (press each button within a second).

Service Adjustment Mode On

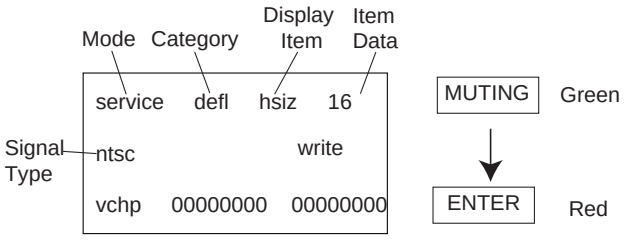
1. The CRT displays the time being adjusted.



2. Press [1] or [4] on the Remote Commander to select the time.
3. Press [3] or [6] on the Remote Commander to change the data.
4. Press [MUTING] then [ENTER] to save into the memory.

Service Adjustment Mode Memory

Turn the set off then on to exit Service Adjustment Mode.



2-6. WHITE BALANCE ADJUSTMENTS

1. Input an entire white signal with burst.
2. Set to Service Adjustment Mode.
3. Set the PICTURE and BRIGHTNESS to minimum.
4. Adjust with SBRT if necessary.
5. Select GCUT and BCUT with [1] and [4] .
6. Adjust with [3] and [6] for the best white balance.
7. Set the PICTURE and BRIGHTNESS to maximum.
8. Select GDRV and BDRV with [1] and [4].
9. Adjust with [3] and [6] for the best white balance.
10. Press [MUTING] then [ENTER] to save into the memory.

SECTION 3: SAFETY RELATED ADJUSTMENTS

3-1. ⋈ R564 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components which are marked with ◪ on the schematic diagram:

Part Replaced (◪)	Adjustment (⋈)
DY, T585, CRT, IC001, IC561, IC600, IC604, C506, C507, C508, C510, C511, C513, C514, L588, D566, D567, D568, PH602, R526, R564, R565, R566, R851, T510, T511…….....A Board	HV HOLD-DOWN R564

Preparation Before Confirmation

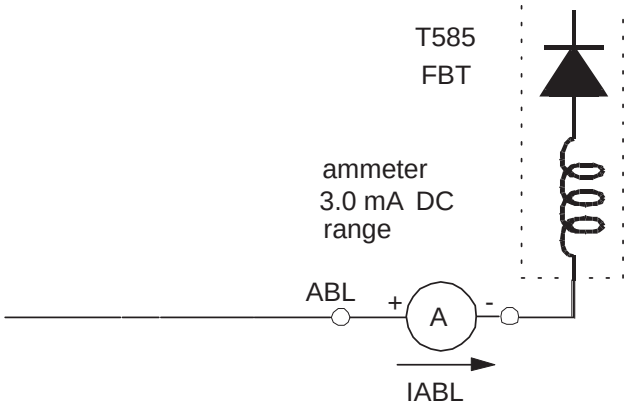
1. Using a Variac, apply AC input voltage: 120 ± 2 VAC.
2. Turn the POWER switch ON.
3. Input a white signal and set the PICTURE and BRIGHTNESS controls to maximum.
4. Confirm that the voltage between C566 (+) or TP30 and ground is more than 99VDC.

Hold-Down Operation Confirmation

1. Connect the current meter between Pin 11 of the FBT (T585) and the PWB land where Pin 11 would normally attach (See Figure 1 on the next page).
2. Input a dot signal and adjust the ABL current to follow with the PICTURE and BRIGHTNESS control: IABL = 140 ± 100µA.
3. Confirm the voltage of A Board TP-23 is 135.6 ± 1.0VDC.
4. Connect the digital voltmeter and the DC power supply via Diode 1SS119 to C566 (+) and ground (See Figure 1 on next page).
5. Increase the DC power voltage gradually until the picture blanks out.
6. Turn DC power source off immediately.
7. Read the digital voltmeter indication (Standard ≤ 114.6 +OVDC/-0.3DC).
8. Input 100 IRE White Signal and adjust the ABL current to follow with the PICTURE and BRIGHTNESS control: IABL = 1820µA ± 200µA.
9. Repeat steps 4 through 7.

Hold-Down Readjustment

If the setting indicated in Step 2 of Hold-Down Operation Confirmation cannot be met, readjustment should be performed by altering the resistance value of R564 component marked with ⋈.



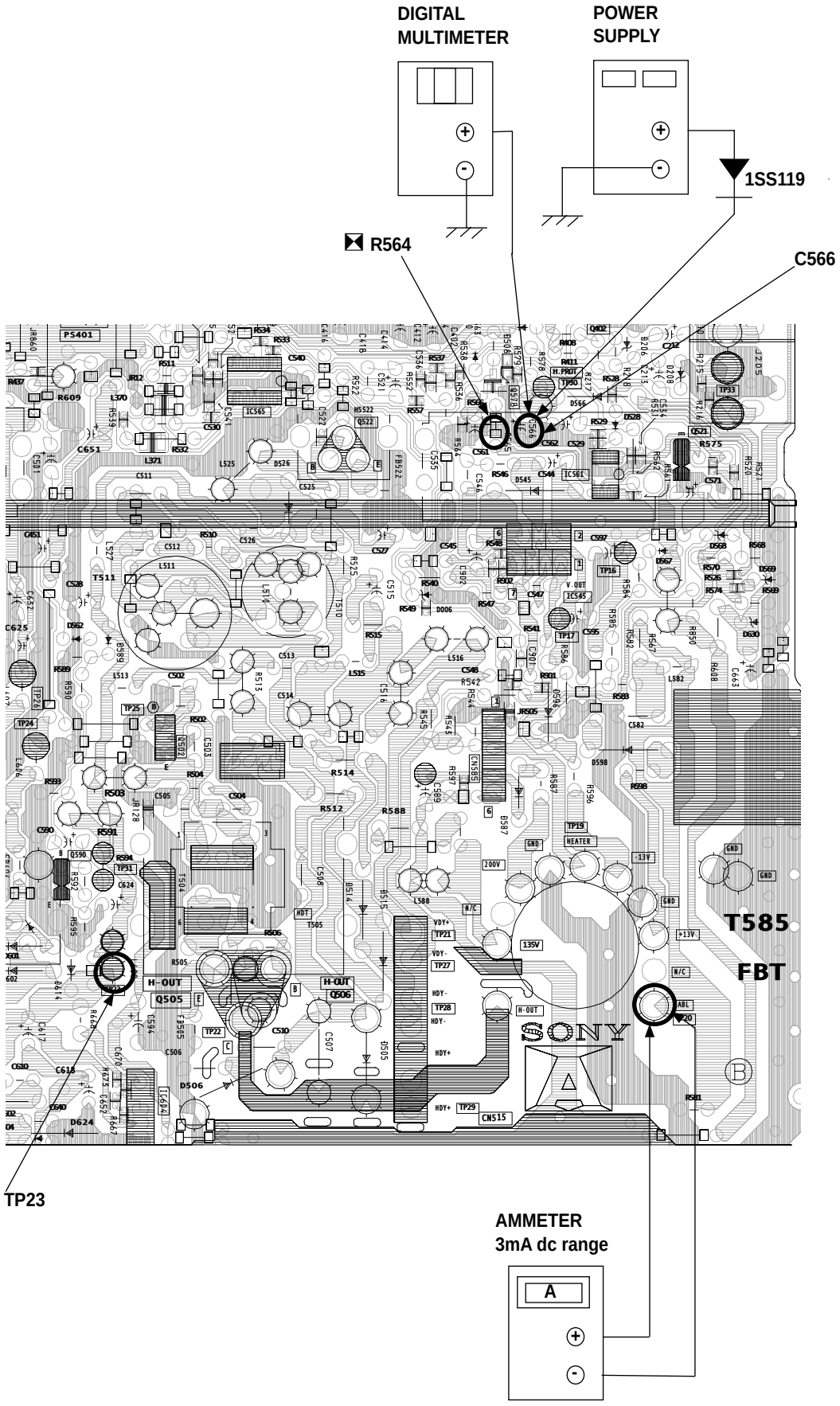
3-2. B+ VOLTAGE CONFIRMATION AND ADJUSTMENT

Note: The following adjustments should always be performed when replacing the following components, which are marked with ◪ on the schematic diagram on the A Board:

A BOARD: ◪ IC604, PH602

1. Using a Variac, apply AC input voltage: 130 + 2.0 / - 0.0 VAC.
2. Input a DOT pattern at Q.C.
3. Set the PICTURE and the BRIGHTNESS controls to minimum.
4. Confirm the voltage of A Board between TP-23 & Ground is =135.6 ± 1VDC.
5. If step 4 is not satisfied, replace the components listed above, then repeat steps 1 throught 3.

FIGURE 1


DIGITAL
MULTIMETER
POWER
SUPPLY
1SS119
R564
C566
T585
FBT
TP23
AMMETER
3mA dc range
A

SECTION 4: CIRCUIT ADJUSTMENTS

Electrical AdjustmenTs by Remote Commander

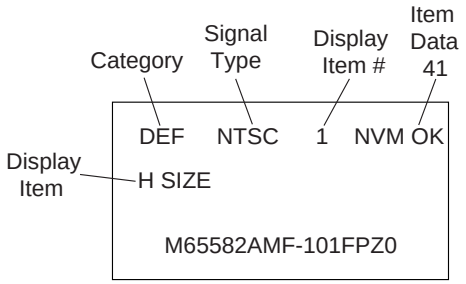
Use the Remote Commander (RM-Y180, RM-Y195) to perform the circuit adjustments in this section.
Test Equipment Required: 1. Pattern generator 2. Frequency counter 3. Digital multimeter 4. Audio oscillator

4-1. SETTING THE SERVICE ADJUSTMENT MODE

1. Standby mode (Power off).
2. Press the following buttons on the remote commander within a second of each other:
   Display ➡ Channel 5 ➡ Sound Volumne + ➡ Power

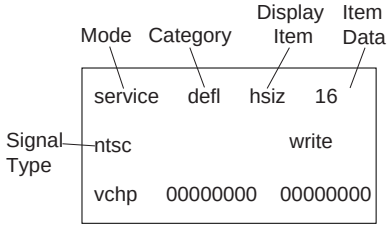
Service Adjustment Mode On

1. The CRT displays the item being adjusted.

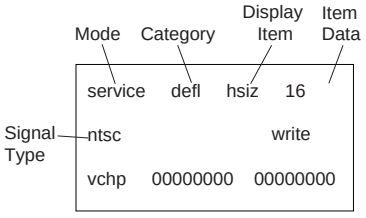


2. Press 1 or 4 on the Remote Commander to select the item.
3. Press 3 or 6 on the Remote Commander to change the data.
4. Press MUTING then ENTER to write into memory.

Service Adjustment Mode Memory



1. Press 8 then ENTER on the Remote Commander to initialize.



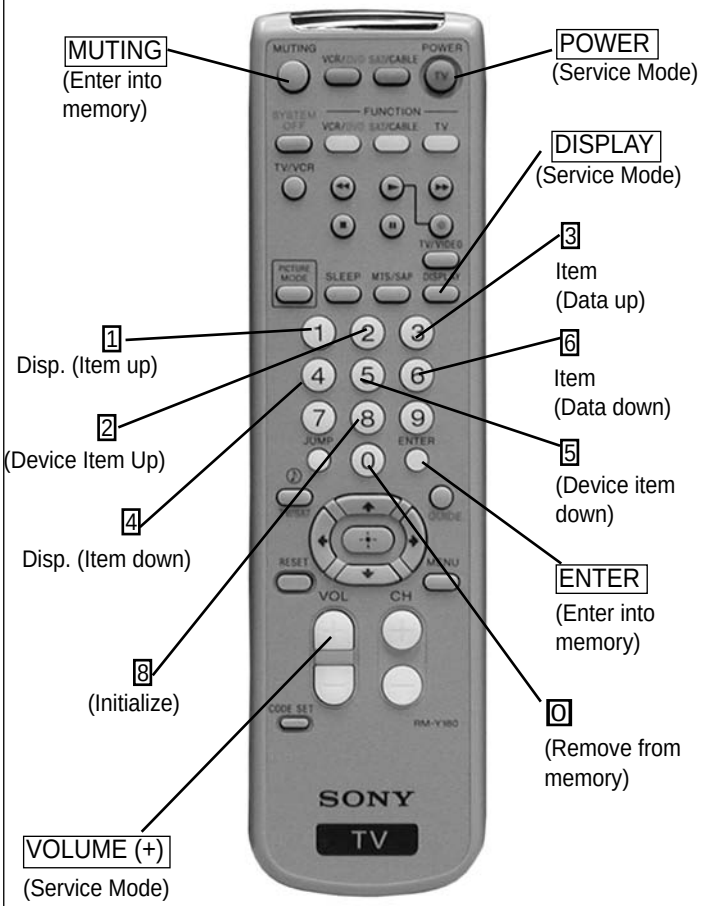
Carry out Step 1 when adjusting IDs 0-7 and when replacing and adjusting IC002

2. Press MUTING then ENTER to write into memory.
3. Turn set off then on to exit Service Adjustment Mode.

4-2. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, pull out the plug from the AC outlet, then replace the plug in the AC outlet again.
2. Turn the power switch ON and set to Service Mode.
3. Call the adjusted items again to confirm they were adjusted.

4-3. REMOTE ADJUSTMENT BUTTONS AND INDICATORS



RM-Y180

4-4. SERVICE DATA LISTS

Service Group	Fix/ Var	No.	Name	Description	NTSC Init Data
VERSION	Fix	0	VER	Microprocessor version information	=
DEF	VAR	1	HSIZ	H-SIZE (EW DC : YUV OFFSET)	47
	VAR	2	HPOS	H POSITION: YUV OFFSET	36
	VAR	3	VSIZ	V RAMP SIZE: YUV OFFSET	28
	VAR	4	VPOS	V POSITION (RAMP DC) NOT USEFUL: YUV OFFSET	37
	VAR	5	VLIN	V LINEARITY	32
	VAR	6	SCOR	S CORRECTION	49
	VAR	7	VBOW	BOW	31
	VAR	8	VANG	ANGLE	37
	VAR	9	TRAP	EW TRAPESIUM	24
	VAR	10	PAMP	PARABOLA (EW PIN)	49
	VAR	11	UPIN	UPPER CORNER (UPPER PIN)	31
	VAR	12	LPIN	LOWER CORNER (LOWER PIN)	30
	VAR	13	TROT	TROT	109
	VAR	14	HBLK	FBPBLK (H BLK MODE SELECT)	0
	VAR	15	RBLK	HBLK R POS (HBLK REAR TIMING: YUV OFFSET)	15
	VAR	16	LBLK	HBLK F POS (HBLK FRONT TIMING: YUV OFFSET)	41
	FIX	17	VBLK	VBLK POS (V BLK WIDTH)	0
	FIX	18	HMSK	Macro OFF (TOP VEND [WHEN MACROVISION] PREVENT OFF)	0
	FIX	19	HDW	IIC_HOUT_DUTY (H PULSE WIDTH [25u/19u]	1
	FIX	20	AFC	H AFC Gain (AFC GAIN)	0
	FIX	21	AFC1	H Charge pump (AFC1 TIME CONSTANT)	3
	FIX	22	AFCW	AFC1 PULLIN (AFC1 PULL IN WIDE)	0
	FIX	23	CDMD	V CD MODE (V DET WINDOW SW TIMING)	1
	FIX	24	HSS	SYNC SLICE LVL(H) (SYNC SLICE LEVEL [H sepa])	0
	FIX	25	VSS	SYNC SLICE LVL(L) (SYNC SLICE LEVEL [V sepa])	3
	FIX	26	SLDN	AUTO SLICE DOWN (AUTO SLICE LEVEL DOWN)	0
	FIX	27	SLUP	AUTO SLICE UP (AUTO SLICE LEVEL UP)	0
	FIX	28	JPSW	VJPSW (JUMP SW)	0
	FIX	29	HOSC	H VCO FOR OFFSET ADJUST OFFSET	7
	FIX	30	EHT	EHT	4
	FIX	31	EHTG	EHT GAIN (EHT MODE)	1

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
16 : 9	VAR	1	VSIZ	V RAMP SIZE	48
	VAR	2	VPOS	V POSITION (RAMP DC)	40
	VAR	3	VLIN	V LINEARITY	26
	VAR	4	SCOR	S CORRECTION	24
	VAR	5	TRAP	EW TRAPESIUM	22
	VAR	6	PAMP	PARABOLA (EW PIN)	24
	VAR	7	UPIN	UPPER CORNER (UPPER PIN)	31
	VAR	8	LPIN	LOWER CORNER (LOWER PIN)	31
	VAR	9	ABLG	ABL GAIN	15
	VAR	10	SCON	SUB CONTRAST LEVEL	13
	VAR	11	VPW	JUMP PULSE WIDTH	1

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data	Video	YUV	16:09
VP1	VAR	1	RDRV	R DRIVE	64	64	64	N/A
	VAR	2	GDRV	G DRIVE: GDOF OFFSET (only Color Temp. "Warm")	45	45	48	N/A
	VAR	3	BDRV	B DRIVE: BDOF OFFSET (only Color Temp. "Warm")	45	45	44	N/A
	VAR	4	RCUT	HARDWARE AKB (R) CMP DATA	120	120	120	N/A
	VAR	5	GCUT	HARDWARE AKB (G) CMP DATA	91	91	90	N/A
	VAR	6	BCUT	HARDWARE AKB (B) CMP DATA	87	87	105	N/A
	VAR	7	SCON	SUB CONTRAST LEVEL	19	19	19	N/A
	VAR	8	SHUE	SUB TINT (HUE)	7	7	7	N/A
	VAR	9	SCOL	SUB COLOR LEVEL	14	14	24	N/A
	VAR	10	SBRT	SUB BRIGHTNESS	13	13	15	N/A
	FIX	11	RON	R OUTPUT ON (0:R OUTPUT OFF 1:R OUTPUT ON)	1			
	FIX	12	GON	G OUTPUT ON (0:R OUTPUT OFF 1:R OUTPUT ON)	1			
	FIX	13	BON	B OUTPUT ON (0:R OUTPUT OFF 1:R OUTPUT ON)	1			
	FIX	14	BLLV	BLUE STRETCH (00:NO<->11:DEEP) only Color Temp "Cool"	1			
	FIX	15	MTRX	MATRIX RATIO SELECT	0			
	FIX	16	AXIS	R-Y PHASE SELECT	52			
	VAR	17	SSHO	SUB SHARPNESS GAIN (OVER) RF/VIDEO	10	25	25	N/A
	VAR	18	SSHP	SUB SHARPNESS GAIN (PRE) RF/VIDEO	15	30	30	N/A
	VAR	19	SHPF	SHARPNESS FOR (00:2 CLK <-> 11:5 CLK)	1	0	0	N/A
	FIX	20	SHCL	SHARPNESS CORING LEVEL	0			
	FIX	21	SHMX	SHARPNESS LIMITER LEVEL	15			
	FIX	22	ACLV	ACL GAIN	0			
	FIX	23	AKBD	AKB SELF DIAGNOSTIC COUNTER (@1 SEC)	2			
	FIX	24	AKBS	AKB SWITCH (0:AKB OFF 1:H/W AKB ON)	1			
	FIX	25	REFP	AKB REFPLS TIMING	0			
	FIX	26	YNRC	YNR LIMITER LEVEL	15			
	FIX	27	BKON	BLACK STRETCH ON	1			
	FIX	28	BKAT	BLACK STRETCH DETECTOR TIME CONSTANT1	15			
	FIX	29	BKRC	BLACK STRETCH DETECTOR TIME CONSTANT2	4			
	FIX	30	BKDP	BLACK STRETCH DEPTH	soft cont'l			
	FIX	31	BKSP	BLKSTPNT BLACK STRETCH POINT	2			

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data	Video	YUV	16:09
VP2	FIX	1	VMOF	VM GAIN(Off) (VM LEVEL AT "OFF" SETTING)	2			
	FIX	2	VMLO	VM GAIN(Low) (VM LEVEL AT "LOW" SETTING)	4			
	FIX	3	VMHI	VM GAIN(High) (VM LEVEL AT "HIGH"SETTING)	7			
	FIX	4	VMDL	VM DELAY (VM DELAY)	6			
	FIX	5	VMPL	VM POL (VM POLARITY)	0			
	FIX	6	VMWD	VM WIDTH (VM WIDTH)	0			
	FIX	7	VMCL	VM CORING LEVEL (VM CORING LEVEL)	0			
	FIX	8	VMMX	VM MAX (VM LIMITER LEVEL)	15			
	FIX	9	CKLV	KILLER LEVEL (VM COLOR KILLER VTH)	1	1	0	N/A
	FIX	10	CKON	FORCE KILLER (FORCE KILLER)	0			
	FIX	11	ALFA	ALFA (ADAPTIVE DET SENSITIVITY)	2			
	FIX	12	YCMD	MANEXP (YC SEPA FORCE SELECT [00:ADAPTIVE 01:H 10:V 11:HV])	0			
	FIX	13	VACL	V APERTURE CORING LV (V APERTURE CORING LEVEL)	0			
	FIX	14	VAGA	V APERTURE GAIN (V APERTURE GAIN LEVEL)	soft cont'l			
	FIX	15	VAMX	V APERTURE MAX GAIN (V APERTURE LIMITER LEVEL)	5			
	FIX	16	GAMM	GAMMA (GAMMA [00:NO <-> 11:DEEP])	soft cont'l			
	FIX	17	YDLY	Y DELAY (Y DELAY TIME)	1	1	3	N/A
	FIX	18	CDLY	C DELAY (C DELAY TIME)	0			
	FIX	19	YOFF	Y Mute (Y OUTPUT MUTE)	0			
	FIX	20	CBPF	SAW FILTER(7.2MHzBPF) (C BPF FOR HI)	0			
	FIX	21	BGPP	BGP POS (BGP [FOR C DECODER] TIMING)	9	9	28	N/A
	VAR	22	GDOF	G DRIVE OFFSET only Color Temp. "Warm"	9			
	VAR	23	BDOF	B DRIVE OFFSET only Color Temp. "Warm"	14			
	VAR	24	GCOF	G CUT CMP DATA OFFSET only Color Temp. "Warm"	11			
	VAR	25	BCOF	B CUT CMP DATA OFFSET only Color Temp. "Warm"	28			
	VAR	26	DCTV	DCTRAN VTH<6:0> (DCTRANSFER VTH)	30			
	FIX	27	DCTG	DCTRAN GAIN<4:0> (DCTRANFER GAIN)	soft cont'l			

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
NR	VAR	1	SCOL	SUB COLOR LEVEL	14
	VAR	2	SHCL	SHARPNESS CORING LEVEL	15
	VAR	3	SHMX	SHARPNESS LIMITER LEVEL	7
	FIX	4	YNRC	YNR LIMITER LEVEL	7
	FIX	5	VMHI	VM LEVEL AT " HIGH " SETTING	10
	FIX	6	VMCL	VM CORING LEVEL	0
	FIX	7	VMMX	VM LIMITER LEVEL	7
	FIX	8	VAMX	V APERTURE LIMITER LEVEL	0
	FIX	9	GAMM	GAMMA (00: NO < - > 11:DEEP)	0
	FIX	10	YNRS	YNR ON	1
	FIX	11	WSTH	WEAK SIGNAL VTH	7
	FIX	12	WSVA	WEAK SIGNAL VIDEO ATT	0
	FIX	13	WSCA	WEAK SIGNAL CHROMA ATT	5
	FIX	14	NRCH	THRNZV1(NOISE DET TIME CONSTANT)	0
	FIX	15	NRCL	THRNZV2 (NOISE DET TIME CONSTANT)	16
	FIX	16	NRVL	THRNZH1 (NOISE DET VTH)	2
	FIX	17	NRVH	THRNZH2 (NOISE DET VTH)	0
	FIX	18	IPNC	DETNZ STATUS COUNTER	2
	FIX	19	IPNV	DETECTION PERIOD	10

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC BA6 DATA (DEC)			
					PALLET = VIVID	PALLET = STD	PALLET = MOVIE	PALLET = PRO
PALLET	FIX	1	VPIC	PICTURE	63	50	37	31
	FIX	2	VBRI	BRIGHTNESS	27	30	31	31
	FIX	3	VCOL	COLOR	37	32	31	31
	FIX	4	VHUE	HUE	31	31	31	31
	FIX	5	VSHA	SHARPNESS	31	32	31	21
	FIX	6	VVM	VM	2	1	0	0
	FIX	7	VTRI	COLOR TEMP	0	1	2	1
	FIX	8	VAPA	APERTURE G	5	5	3	0
	FIX	9	VGMA	GAMMA	3	1	0	0
	FIX	10	VDCT	DCT LV	23	15	2	2
	FIX	11	VBKP	BLACK STRETCH DEPTH (VIDEO)	3	3	4	7
	FIX	12	TBKD	BLACK STRETCH DEPTH (TUNER)	3	3	4	7

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
≻	FIX	1	YNRS	YNR SW (YNR ON)	0
	FIX	2	YTHR	Y THR 2D (Y SIGNAL THROUGH 2DYCS)	0
	FIX	3	Y2D	Y2D Fix (Y SIGNAL GENERATE from 2DYCS)	0
	FIX	4	2DFX	C BPF Fix (C SIGNAL GENERATE from H/V BPF only	1
	FIX	5	CLPS	CLAMP CONTROL SW (0: CLAMP OFF. 1: CLAMP AUTO. 2: CLAMP ON]	1
	FIX	6	VLPF	VIDEO LPF (Y_LPF [ANALOG] for adjust)	3
	FIX	7	CLPF	CHROMA LPF (C_LPF [ANALOG] for adjust)	3
	FIX	8	BPFB	YCS HBPF BACK (YCS HBPF SELECT [BACK])	1
	FIX	9	BPFF	YCS HBPF FRONT (YCS HBPF SELECT [FRONT])	1
	FIX	10	BKTS	BS T2 IFON (BLACK STRETCH RECOVER TIME OUT	0
	FIX	11	VMG_2	$VMGAIN_2$ (MODULATOR FEEDBACK GAIN CONTROL	3
	FIX	12	CLPT	CLAMP KEEP TIMER (CLAMP AUTO ON KEEP TIMER COUNT [@ 100 MS])	15

Service Group	Fix/ Var	No.	Name	Item name & (Description)	A8 Init Data	Video	YUV	16:09
C	FIX	1	A1FL	AMP OFF1 L (ANALOG ACC hysteresis)	90			
	FIX	2	A1ON	AMP ON (ANALOG ACC AMP ON LEVEL)	4			
	FIX	3	ACCS	ACC SW (ACC ON/OFF)	0	0	1	N/A
	FIX	4	AASL	AVE SEL (C DECODER TIME CONSTANT [32, 16, 8, 1H])	2			
	FIX	5	BASL	B2AVE SEL (ACC TIME CONSTANT)	0			
	FIX	6	XFFR	FREE RUN (VCXO FORCE FREERUN)	0	0	1	N/A
	FIX	7	A2ON	AMP2 ON Thresh (ABL VTH)	4			
	FIX	8	A3ON	AMP3 ON Thresh (ACL VTH)	4			
	FIX	9	A2FL	AMP2 OFF Thresh L (AMP2 OFF LEVEL LOWER)	64			
	FIX	10	A3FL	AMP3 OFF Thresh L (AMP3 OFF LEVEL LOWER)	64			
	FIX	11	AXTH	AXIS HYS (AXS HYS)	30			
	FIX	12	ACTH	ROM HYS (ROM HYS)	10			
	FIX	13	AVAV	AVE SEL AV (AVE SEL AV)	3			
	FIX	14	B2TH	B2COMP (B2COMP)	0			
	FIX	15	ACCP	ACC COMP (ACC COMP)	0			

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data	Video	YUV	16:09
RGB	FIX	1	AMUT	RGB POWER ON MUTE (RGB POWER ON MUTE)	0			
	FIX	2	PMUT	RGB Mute before OSD (RGB MUTE [EXCEPT OSD]	1			
	FIX	3	CORL	CUTOFF R L (R CUTOFF LOWER)	212			
	FIX	4	CORH	CUTOFF R H (R CUTOFF UPPER)	0			
	FIX	5	COGL	CUTOFF G L (G CUTOFF LOWER WHEN TEMP IS "COOL" AND "NEUTRAL"	197			
	FIX	6	COGH	CUTOFF G H (G CUTOFF LOWER WHEN TEMP IS "COOL" AND "NEUTRAL"	0			
	FIX	7	COBL	CUTOFF B L (B CUT OFF LOWER WHEN TEMP IS "COOL" AND "NEUTRAL"	176			
	FIX	8	COBH	CUTOFF B H (B CUT OFF LOWER WHEN TEMP IS "COOL" AND "NEUTRAL"	0			
	FIX	9	ABLS	ABL SEL (ABL SELECT)	0			
	FIX	10	ALSP	ACL SPEED (ACL SPEED)	0			
	FIX	11	ALRS	ACL SPE (ACL RECOVER SPEED)	2			
	FIX	12	ALAS	ACL ASPE (ACL ATACK SPEED)	9			
	FIX	13	ABLG	ABL GAIN (ABL GAIN)	5			
	FIX	14	ALS2	ACLASPE2 (ACL ATACK SPEED [2])	2			
	FIX	15	AKBM	AKB MODE (AKB MODE)	0			
	FIX	16	AKBP	AKB P[5:0] (AKB PULSE HEIGHT)	16			
	FIX	17	OSDL	OSD LIMIT (OSD LIMMIT SELECT)	0			
	FIX	18	UVIN	Y/U/V UVINV (U/V INVERT)	0			
	FIX	19	UVG	U/V GAIN (U/V OFFSET CANCELER ON)	0			
	FIX	20	UOFS	U IN OFFSET (U IN OFF SET)	15			
	FIX	21	VOFS	V IN OFFSET (V IN OFFSET)	12			
	FIX	22	AALG	ANA ACL GAIN (ANALOG ACL GAIN CONTROL)	0			
	FIX	23	AALS	ANA ACL ON (ANALOG ACL ON/OFF CONTROL)	1			
	FIX	24	UVDE	UV_DITHER_EN (UVIN DITHER ENABLE)	0	0	1	N/A
	FIX	25	UVDT	UV_DITHER_TEST (UVIN DITHER TEST)	0	0	6	N/A

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data	Video	YUV	16:09
DEFD	FIX	1	HFFR	AFC FREE RUN (AFC1 FORCE FREE RUN)	0			
	FIX	2	HFUP	HFREE UP (H FREE RUN FREQUENCY UP [700 Hz]	0			
	FIX	3	JSWW	VJP WIDTH (JUMP PULSE WIDTH)	0			
	FIX	4	EWCL	V/EW DAC CLK CONTROL (EW/VRAMP DA CLOCK SELECT)	0	0	0	N/A
	FIX	5	XF0A	FREE RUN OFFSET (VCXO FREE RUN ADJUST)	0			
	FIX	6	BGST	BG START (BGP [FOR PLL] TIMING)	16	16	1	N/A
	FIX	7	XPHA	VCXO CTL (VXCO PHASE ADJUST)	10			
	FIX	8	HRMP	Ramp Slew Rate (AFC2 TIME CONSTANT)	3			
	FIX	9	RPLU	Ref Charge pump (REF PLL TIME CONSTANT)	3			
	FIX	10	RPLB	Ref VCO (REF PLL TIME CONSTANT)	1			
	FIX	11	XF0B	VCXO FREE RUN (VXCO Fo ADJUST)	0			
	FIX	12	RPLS	REF FB SW (REF VCO FB LOOP SELECT)	0			
	FIX	13	SSM	Sync Sepa Mask (SyncSepaMasking CONTROL)	0			
	FIX	14	VSAG	V-sag (V-SAG prevent ON)	0			
	FIX	15	AFC2	AFC2 Gain (AFC2 GAIN CONTROL)	3			
	FIX	16	VRFL	V RAMP FIL OFF (V RAMP FILTER SWITCHING OFF)	1			
	FIX	17	SSLP	LPY SYNC (LFP pre SYNC SEPA ON/OFF	1			
	FIX	18	XPLU	B PLL Change pump (ACP TIME CONSTANT)	1			
	FIX	19	8FSC	8FSC SEL (8fsCLK Skew OFF)	1	1	0	N/A
	FIX	20	4FS2	4FSC SEL2 (4fsCLK Skew OFF)	1	1	0	N/A
	FIX	21	CDM2	V_CD_MODE2 (V_LOGIC SW)	1			
	FIX	22	BGPC	Add. FTN BGP C (BGP C)	0			
	FIX	23	MHDL	Add. FTN BGP SEL (BBP SEL)	1			
	FIX	24	BFRE	V FREE (FORCE V FREE RUN)	0			
	FIX	25	HRPP	AFC2 RAMP POS (FRAMP RRAMP H OUT CONTROL RANGE	8			
	FIX	26	DSCK	CLOCK SEL (DS DAC CLK SW 2)	1	1	1	0
	FIX	27	VBHK	VBLK HALFKIL (V BLK HALF KILL)	0			
	FIX	28	VPW	V PLS WIDTH (V Pulse Wide)	1			
	FIX	29	DTH	D THRESHOLD LEVEL (DITHER THRESHOLD LEVEL CONTROL AT IIC AUTOD= ON	0			
	FIX	30	SLON	LPF SYNC ON (LPF SYNC ON)	1			

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data	Video	YUV	16:09
DEFD	FIX	31	VSSW	SYNC SLICE LVL(V)_W (SYNC SLICE LEVEL [V] Wide Window	0			
	FIX	32	AF2S	AFC2_SEL (ADC2 TIMING SW)	0			
	FIX	33	VSL2	V_SYNC_LPF_2 (DIGITAL V_SINC_LPF [Fall])	0			
	FIX	34	VSL1	V_SYNC_LPF_1 (DIGITAL V_SINC_LPF [Rise])	1			
	FIX	35	VYUV	YUV VSIZE OFFSET (YUV V-SIZE OFFSET)	8			
	FIX	36	VYVP	YUV VPOS OFFSET (YUV V-POSITION OFFSET)	8			
	FIX	37	VYHS	YUV HSIZE OFFSET (YUV H-SIZE OFFSET)	8			
	FIX	38	VYHP	YUV HPOS OFFSET (YUV H-POSITION OFFSET)	7			
	FIX	39	VSHE	V-SHRINK MODE (V-SHRINK MODE for AV)	0			
	FIX	40	VYRB	YUV RBLK (YUV RBLK OFFSET)	7			
	FIX	41	VYLB	YUV LBLK (YUV LBLK OFFSET)	7			

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data	Video	YUV	16:09
OTHER	FIX	1	PCLP	pedestal CLAMP ON/OFF (SYNC TIP/PEDESTAL CLAMP SELECT)	0			
	FIX	2	VRT	VRT Voltage (ADC REFERENCE [00:1.15Vpp 01:1.25 Vpp 10:1.35 Vpp 11:1.45 Vpp])	1			
	FIX	3	14HI	INV 14H CLK (4fsc [Skew] CLK POLARITY)	0	0	0	N/A
	FIX	4	14HD	14H CLK DLY (4fscCLK [Skew] CLK DELAY ADJUST)	0	0	0	N/A
	FIX	5	DSI	INV DS CLK (8fscCLK POLARITY)	0	0	0	N/A
	FIX	6	DSD	DS CLK DLY (8fscCLK DELAY ADJUST)	0	0	0	N/A
	FIX	7	ADCD	AD CLK DLY (ADC CLK DELAY ADJUSTO)	0	0	1	N/A
	FIX	8	4FSC	4FSC SW (AD/LOGIC CLK SWAP)	0			
	FIX	9	WSTH	WEAK_SIG_VTH (WEAK_SIGNAL VTH)	0			
	FIX	10	WSVA	WEAK SIG VIDEO ATT (WEAK SIGNAL VIDEO ATT)	0	0	0	N/A
	FIX	11	WSCA	WEAK SIG CHROMA ATT (WEAK SIGNAL CHROMA ATT)	0	0	0	N/A
	FIX	12	VREF	VREF_SEL (AD REFERENCE SELECT [VZ])	0			

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
OSD	FIX	1	HT	HT (HALF TONE LEVEL)	0
	FIX	2	OSLR	OSD LVL R (R OSD LEVEL)	25
	FIX	3	OSLG	OSD LVL G (G OSD LEVEL)	25
	FIX	4	OSDC	OSD COMP (OSD COMP)	0
	FIX	5	OSLB	OSD LVL B (B OSD LEVEL)	25

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
H/W AKB	FIX	1	HRIL	H/W AKB R INI DATA L (H/W AKB RED OUTPUT LOWER)	soft cont'l
	FIX	2	HRIH	H/W AKB R INI DATA H (H/W AKB RED OUTPUT UPPER)	soft cont'l
	FIX	3	HGIL	H/W AKB G INI DATA L (H/W AKB GREEN OUTPUT LOWER)	soft cont'l
	FIX	4	HGIH	H/W AKB G INI DATA H (H/W AKB GREEN OUTPUT UPPER)	soft cont'l
	FIX	5	HBIL	H/W AKB B INI DATA L (H/W AKB BLUE OUTPUT LOWER)	soft cont'l
	FIX	6	HBIH	H/W AKB B INI DATA H (H/W AKB BLUE OUTPUT UPPER)	soft cont'l
	FIX	7	HLM1	AKB_LIM1<7:0> (H/W AKB LIM1)	6
	FIX	8	HLM2	AKB_LIM2<7:0> (H/W AKB LIM2)	12
	FIX	9	HLM3	AKA_LIM3<7:0> (H/W AKB LIM3)	21
	FIX	10	HAD1	AKB_ADD1<7:0> (H/W AKB SPEED1)	2
	FIX	11	HAD2	AKB_ADD2<7:0> (H/W AKB SPEED2)	6
	FIX	12	HAKE	AKB_EN (H/W AKB MANUAL [MCU] / HARD	1
	FIX	13	HASP	AKB_SPEED (H/W AKB SPEED)	3
	FIX	14	HERL	AKB_SWERR<7:0> (H/W AKB ERROR DET THRESH)	40
	FIX	15	HLMC	AKB_ERRC<7:0> (H/W AKB ERROR DET TIME)	20
	FIX	16	HPWL	AKBSWPON<7:0> (H/W AKB POWER ON TRESH)	4
	FIX	17	HPWC	AKB_PWERRC (H/W AKB POWER ON TIME)	90
	FIX	18	HFMT	H/W AKB2 HOLD TIMER (H/W AKB2 HOLD TIMER (@ 100 MSEC) [0: No hold]	20
	FIX	19	SPMT	AKB POW ON MUTE EXIT (AKB POWER ON MUTE EXIT TIMMER)	120

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC	
					29FA310	27/29FS120
AUDIO PROCESSOR	VAR	1	SBAL	SBAL (SUB BALANCE)	4	4
	VAR	2	SBAS	SBAS (SUB BASS)	0	0
	VAR	3	STRE	STRE (SUB TREBLE)	6	0
	VAR	4	SRL	SRL (SURROUND LEVEL)	0	0
	VAR	5	BBOL	BBOL (SURROUND OFF-BBE LOW)	8	6
	VAR	6	BBOH	BBOH (SURROUND OFF-BBE HIGH)	4	5
	VAR	7	BBSL	BBSL (SIMULATE BBE LOW)	2	4
	VAR	8	BBSH	BBSH (SIMULATE BBE HIGH)	4	4
	VAR	9	BBGL	BBGL (WOW GAME BBE LOW)	6	0
	VAR	10	BBGH	BBGH (WOW GAME BBE HIGH)	4	0
	VAR	11	BBTL	BBTL (SRS BBE LOW)	0	6
	VAR	12	BBTH	BBTH (SRS BBE HIGH)	0	4
	VAR	13	BBDL	BBDL (Audio Processor Prologic BBE Low for DOLBY)	6	0
	VAR	14	BBDH	BBDH (Audio Processor Prologic BBE High for DOLBY)	4	0
	VAR	15	VFIX	VFIX (AUDIO OUTPUT FIX DATA)	0	243
	VAR	16	AGCL	AGCL (AGC LEVEL)	2	2
	VAR	17	VCOF	RF OFFSET DATA	9	9

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC	
					29FA310	27/29FS120
AP2	VAR	1	BBEL	SUB AUDIO PROCESSOR PROLOGIC BBE LOW	9	0
	VAR	2	BBEH	SUB AUDIO PROCESSOR PROLOGIC BBE HIGH	9	0
	VAR	3	BBOL	SURROUND OFF-BBE LOW	9	0
	VAR	4	BBSL	SIMULATE BBE LOW	5	0
	VAR	5	BBGL	WOW GAME BBE LOW	10	0
	VAR	6	AGCL	SUB AUDIO PROCESSOR AGC LEVEL	2	0
	VAR	7	DDOF	DOLBY OFFSET DATA	15	0

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
MICROPROCESSOR	FIX	1	DISP	DISP (OSD HORIZONTAL OFFSET)	55
	FIX	2	CCHP	CCHP (FOR TILT DATA CALCULATION)	80
	FIX	3	HRLW	HRLW (LOW LIMIT OF H-PULSE COUNTING WINDOW [RF]	16
	FIX	4	HRHG	HRLG (HIGH LIMIT OF H-PULSE COUNTING WINDOW [RF]	64
	FIX	5	HSDT	HSDTCT (H-PULSE DETECTION [S-VIDEO]	8
	FIX	6	STPI	STPI (GRADUAL CONTRAST INCREASE STARTING LEVEL)	40
	FIX	7	RAPI	RAPI (GRADUAL CONTRAST INCREASE Vsync COUNTER)	10

Service Group	Fix/ Var	No.	Name	Item name & (Description)	NTSC Init Data
Feature	VAR		ID0	Language related	81
	VAR		ID1	Video related	31
	VAR		ID2	Audio related	113
	VAR		ID3	Miscellaneous	130
	VAR		ID4	Miscellaneous	32
	VAR		ID5	Miscellaneous	24
	VAR		ID6	Miscellaneous	48
	VAR		ID7	Miscellaneous	69

4-5. ID MAP TABLE

Model	Destination	ID-O	ID-1	ID-2	ID-3	ID-4	ID-5	ID-6	ID-7
KV-27FA310	US	81	31	17	130	32	24	48	69
KV-27FA310	CND	81	31	17	130	32	24	48	69
KV-27FS120	US	89	31	17	34	0	24	0	5
KV-27FS120	CND	89	31	17	50	0	24	0	5
KV-29FS120	L NORTH	81	31	17	130	32	24	48	69
KV-29FS120	L SOUTH	81	31	17	130	32	24	48	69
KV-29FA310	L NORTH	81	31	113	130	32	24	48	69
KV-29FA310	L SOUTH	81	31	113	130	32	24	48	69

4-6. A BOARD ADJUSTMENTS

H. Frequency (Free Run) Check

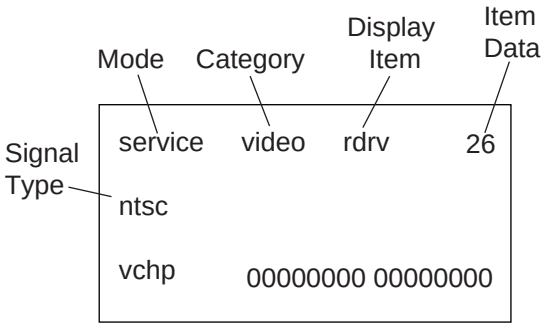
1. Input a TV mode (RF) with no signal.
2. Connect a frequency counter to base of Q502 (TP-25 H. DRIVE) on the A Board.
3. Check H. Frequency for 15735 ± 200 Hz.

V. Frequency (Free Run) Check

1. Select video 1 with no signal input.
2. Set the conditions for a standard setting.
3. Connect the frequency counter to TP-27 (V OUT) or CN515 pin ⑥ (V DY+) and ground on the A Board .
4. Check that V. Frequency shows 60 ± 4 Hz.

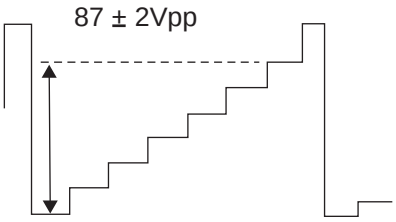
Drive (SCON)

1. Input a color-bar signal and set the level to 75%.
2. Set in Pro mode + PICTURE MAX.
3. Activate the Service Adjustment Mode.
4. Set GON and BON items. Using 3 and 6 set each to the following values. Leave RON set to “1”.



R ON:	ON	(1)
G ON:	OFF	(0)
B ON:	OFF	(0)

5. Connect an oscilloscope probe to CW Board, JW2704 (KR).
6. Select SCON with 1 and 4 .
7. Adjust the value of SCON with 3 and 6 for 87 ± 2Vpp.



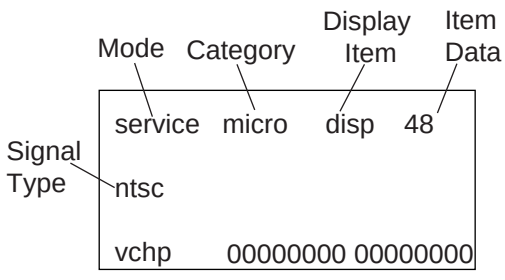
8. Reset GON and BON values to “1”.

R ON:	ON	(1)
G ON:	ON	(1)
B ON:	ON	(1)

9. Press MUTING then ENTER to save into the memory.

Display Position Adjustment (DISP)

1. Input a color-bar signal.
2. Set to Service Adjustment Mode.
3. Select DISP with 1 and 4 .
4. Adjust values of DISP with 3 and 6 to adjust characters to the center.
5. Press MUTING then ENTER to save into the memory.
6. Check to see if the text is displayed on the screen.

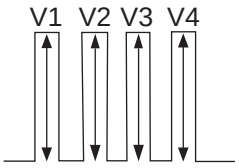


Sub Bright Adjustment (SBRT)

1. Input a monoscope signal.
2. Activate the Service Adjustment Mode.
3. Set the PICTURE and BRIGHTNESS to minimum.
4. Select the SBRT item with 1 and 4 .
5. Adjust the values of SBRT with 3 and 6 to obtain a faintly visible 20 IRE mark, after that increase +3 steps.
6. Press MUTING then ENTER to save into the memory.

Sub Hue, Sub Color Adjustment (SHUE, SCOL)

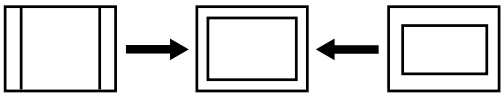
1. Input color-bar signal at 75%.
2. Activate the Service Adjustment Mode.
3. Set (PIC) to Max and (COL) to 50%.
4. Connect an oscilloscope probe to CW Board, JW7408 (Blue Out).
5. Select the SHUE and SCOL item with 1 and 4 .
6. While showing the SHUE item, adjust the waveform with 3 and 6 until the second and third bars show the same level (V2 = V3 < 0.15Vp-p). Set Sub Hue -2 Step.
7. While showing the SCOL item, adjust the waveform with 3 and 6 until the first and fourth bars show the same level (V1 = V4 < 0.15Vp-p). Set Sub Col + 2 Step.



8. Press MUTING then ENTER to save into the memory.

V. Size Adjustment (VSIZ)

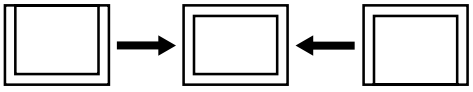
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the VSIZ item with 1 and 4.
4. Adjust value of VSIZ with 3 and 6 for the best vertical size.
5. Press MUTING then ENTER to save into the memory.



V. Center Adjustment (VPOS)

Perform this adjustment after performing H. Frequency (Free Run) Check.

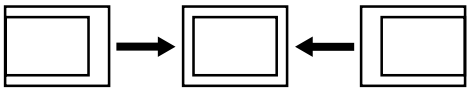
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the VPOS item with 1 and 4 .
4. Adjust value of VPOS with 3 and 6 for the best vertical center.
5. Press MUTING then ENTER to save into the memory.



H. Center Adjustment (HPOS)

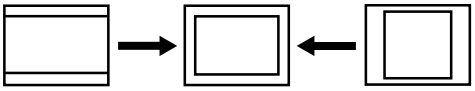
Perform this adjustment after performing H. Frequency (Free Run) Check.

1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select the HPOS item with 1 and 4 .
4. Adjust the value of HPOS with 3 and 6 for the best horizontal center.
5. Press MUTING then ENTER to save into the memory.



H. Size Adjustment (HSIZ)

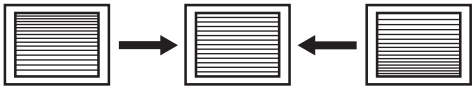
1. Input a monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HSIZ with 1 and 4 .
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then ENTER to save into the memory.



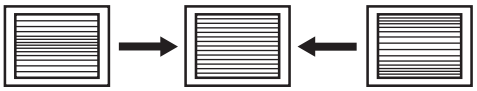
V. Linearity (VLIN), V. Correction (SCOR), PIN Amp (PAMP), and Horizontal Trapezoid (HTRP) Adjustments

1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select VLIN, SCOR, PAMP, and HTRP with with 1 and 4.
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then ENTER to save into the memory.

V LINEARITY (VLIN)

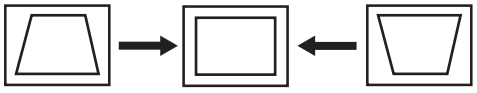


V CORRECTION (SCOR)



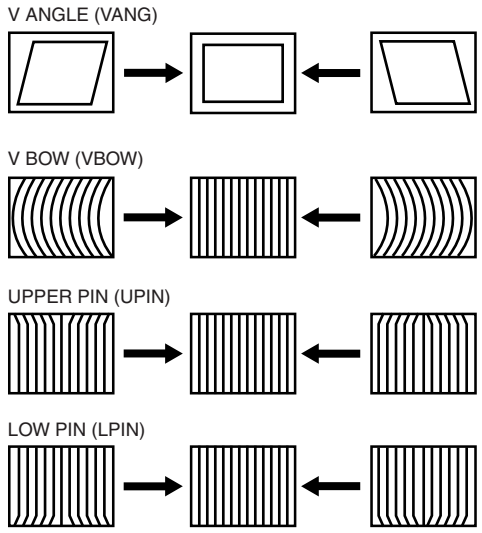
PIN AMP (PAMP)

HORIZONTAL TRAPEZOID (HTRP)



V. Angle (VANG), V. Bow (VBOW), Upper PIN (UPIN) and Low PIN (LPIN) Adjustments

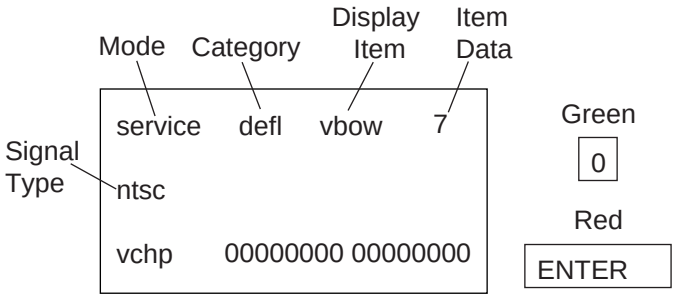
1. Input a crosshatch signal.
2. Activate the Service Adjustment Mode.
3. Select VANG, VBOW, UPIN, and LPIN with 1 and 4.
4. Adjust with 3 and 6 for the best picture.
5. Press MUTING then ENTER to save into the memory.



Service Adjustment Mode Memory

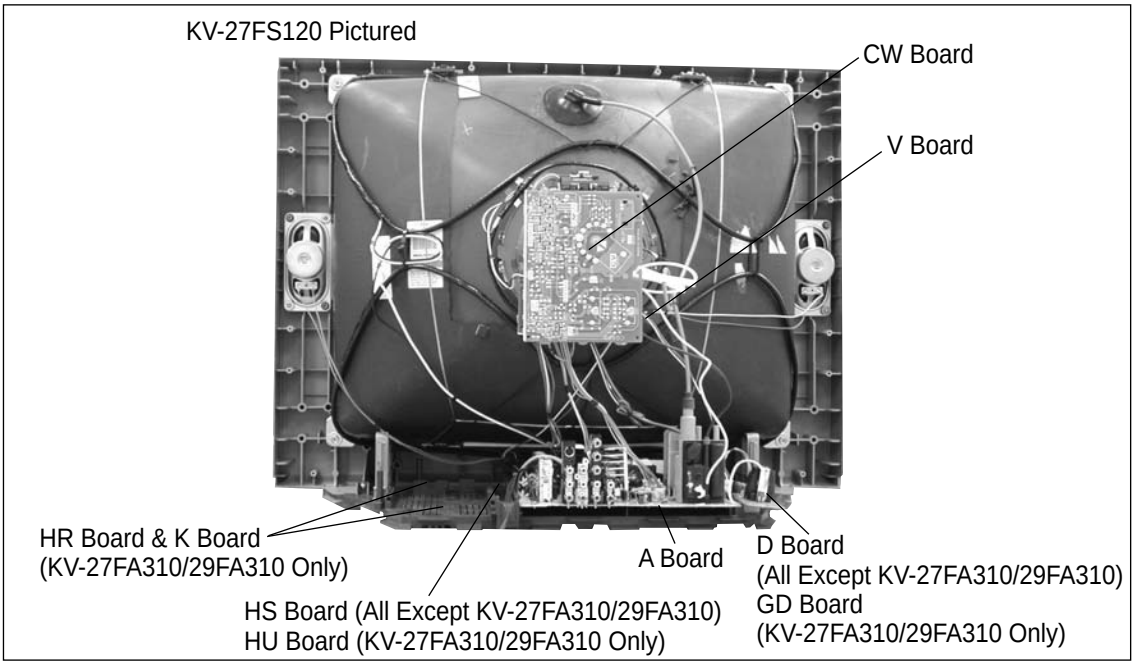
1. After completing all adjustments, press 0 then ENTER .

Read From Memory



SECTION 5: DIAGRAMS

5-1. CIRCUIT BOARDS LOCATION



5-2. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM INFORMATION

All capacitors are in µF unless otherwise noted. pF : µµF 50WV or less are not indicated except for electrolytics and tantalums.

All electrolytics are in 50V unless otherwise specified.

All resistors are in ohms. k=1000, M=1000k

Indication of resistance, which does not have one for rating electrical power, is as follows: Pitch : 5mm Rating electrical power :

$^1/_4$ W in resistance, $^1/_{10}$ W and $^1/_8$ W in chip resistance.

: nonflammable resistor.

: fusible resistor.

△ : internal component.

: panel designation and adjustment for repair.

⊥ : earth ground

⏚ : earth-chassis

All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

Readings are taken with a color-bar signal input.

Readings are taken with a 10M digital multimeter.

Voltages are DC with respect to ground unless otherwise noted.

Voltage variations may be noted due to normal production tolerances.

All voltages are in V.

S : Measurement impossibillity.

: B-line. (Actual measured value may be different).

: signal path. (RF)

Circled numbers are waveform references.

The components identified by shading and ⚠ symbol are critical for safety. Replace only with part number specified.

The symbol indicates a fast operating fuse and is displayed on the component side of the board. Replace only with fuse of the same rating as marked.

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

Le symbole indique une fusible a action rapide. Doit etre remplace par une fusible de meme yaleur, comme maque.

REFERENCE INFORMATION

RESISTOR

: RN	METAL FILM
: RC	SOLID
: FPRD	NONFLAMMABLE CARBON
: FUSE	NONFLAMMABLE FUSIBLE
: RW	NONFLAMMABLE WIREWOUND
: RS	NONFLAMMABLE METAL OXIDE
: RB	NONFLAMMABLE CEMENT
: ※	ADJUSTMENT RESISTOR

COIL

: LF-8L	MICRO INDUCTOR

CAPACITOR

: TA	TANTALUM
: PS	STYROL
: PP	POLYPROPYLENE
: PT	MYLAR
: MPS	METALIZED POLYESTER
: MPP	METALIZED POLYPROPYLENE
: ALB	BIPOLAR
: ALT	HIGH TEMPERATURE
: ALR	HIGH RIPPLE

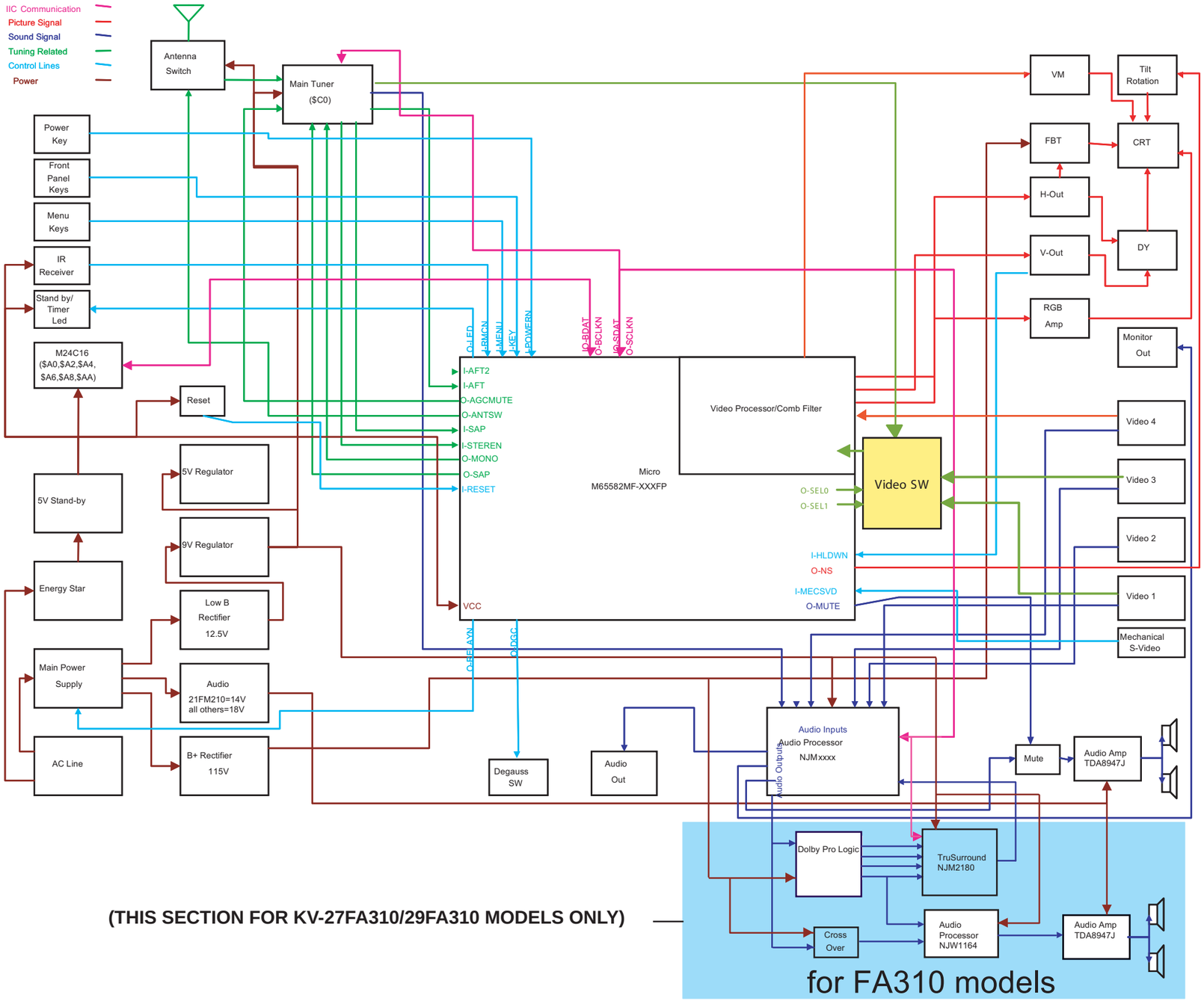
The components identified by ⋈ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be necessary, replace only with the value originally used.

When replacing components identified by ◪, make the necessary adjustments as indicated. If the results do not meet the specified value, change the component identified by ⋈ and repeat the adjustment until the specified value is achieved.
(Refer to Section 3: Safety Related Adjustments on Page 17.)

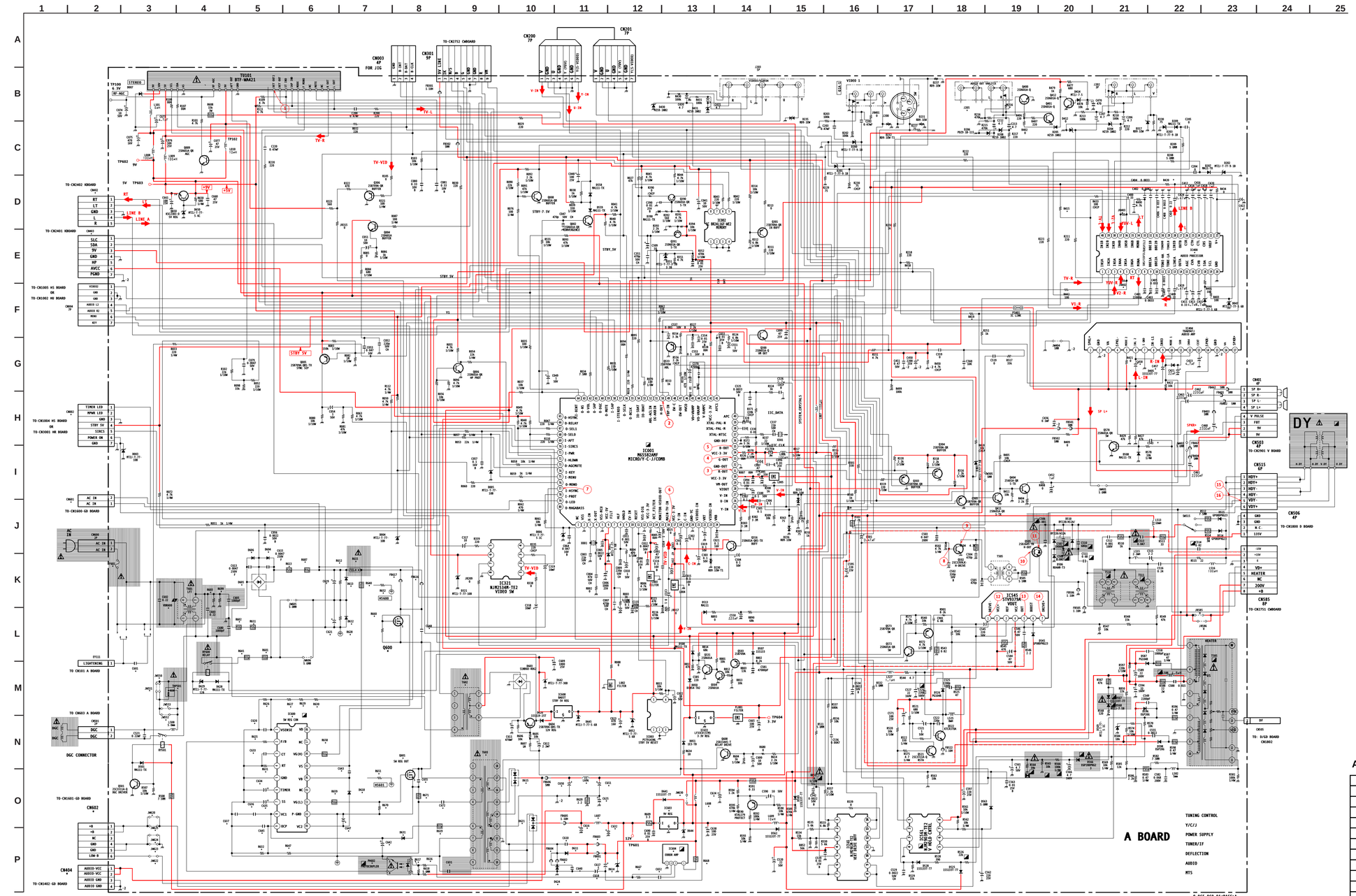
When replacing the parts listed in the table below, it is important to perform the related adjustments.

Part Replaced (◪)	Adjustment (⋈)
DY, T585, CRT, IC001, IC561, IC600, IC604, C506, C507, C508, C510, C511, C513, C514, L588, D566, D567, D568, PH602, R526, R564, R565, R566, R851, T510, T511…….....A Board	HV HOLD-DOWN R564

5.3. BLOCK DIAGRAM AND SCHEMATICS



A BOARD SCHEMATIC DIAGRAM



A BOARD WAVEFORMS

1	2	3	4
2.1 Vp-p (H)	3.2 Vp-p (H)	1.2 Vp-p (H)	0.9 Vp-p (H)
5	6	7	8
1.0 Vp-p (H)	1.0 Vp-p (V)	4.7 Vp-p (H)	2.4 Vp-p (H)
9	10	11	12
168.8 Vp-p (H)	28.7 Vp-p (H)	1.14K Vp-p (V)	1.0 Vp-p (H)
13	14	15	16
50.3 Vp-p (V)	0.7 Vp-p (H)	196.9 Vp-p (H)	1.9 Vp-p (V)

A BOARD IC VOLTAGE LIST

IC001								IC561		IC603	
PIN	VOLT	PIN	VOLT	PIN	VOLT	PIN	VOLT	PIN	VOLT	PIN	VOLT
1	N/C	46	2.3	IC003		27	4.5	1	0.1	I	12.0
2	GND	47	1.0	PIN	VOLT	28	4.5	2	3.4	G	GND
3	2.2	48	N/C	1	N/C	29	4.5	3	2.3	O	9.0
4	2.2	49	0.5	2	GND	30	4.5	4	GND	IC604	
5	GND	50	1.2	3	GND	31	4.5	5	9.2	PIN	VOLT
6	5.0	51	2.0	4	5.0	32	4.5	6	10.2	1	133.7
7	0.0	52	1.5	5	5.0	33	4.5	7	0.1	2	N/C
8	2.0	53	4.8	IC321		34	N/C	8	13.5	3	2.5
9	0.3	54	4.8	PIN	VOLT	35	N/C	IC565		4	11.3
10	2.1	55	4.8	1	4.5	36	N/C	PIN	VOLT	5	GND
11	5.0	56	4.8	2	0.3	37	4.5	1	3.4	IC608	
12	GND	57	N/C	3	4.5	38	4.5	2	3.4	PIN	VOLT
13	3.3	58	5.2	4	0.4	39	4.5	3	2.1	I	11.0
14	3.1	59	0.0	5	4.5	40	4.5	4	9.0	O	5.0
15	1.0	60	0.0	6	9.0	IC404		5	1.0	G	GND
16	1.5	61	0.0	7	4.4	PIN	VOLT	6	1.0	IC633	
17	3.3	62	0.0	8	GND	1	8.3	7	1.0	PIN	VOLT
18	0.5	63	1.4	IC400		2	GND	8	1.6	I	9.0
19	1.1	64	4.9	PIN	VOLT	3	19.6	9	1.6	G	GND
20	GND	65	4.9	1	4.5	4	8.3	10	1.6	O	3.3
21	0.5	66	0.0	2	4.5	5	19.6	11	GND		
22	1.7	67	0.1	3	4.5	6	3.2	12	1.6		
23	0.5	68	0.1	4	4.5	7	0.0	13	1.6		
24	0.5	69	2.4	5	N/C	8	0.0	14	1.6		
25	0.5	70	5.0	6	N/C	9	3.2	IC600			
26	0.0	71	5.0	7	N/C	10	9.1	PIN	VOLT		
27	0.0	72	0.1	8	4.5	11	9.7	1	2.5		
28	2.1	73	0.0	9	4.5	12	3.2	2	1.8		
29	2.7	74	5.0	10	4.5	13	3.3	3	2.2		
30	3.3	75	5.0	11	4.5	14	8.3	4	2.5		
31	2.9	76	5.0	12	4.5	15	GND	5	GND		
32	GND	77	0.1	13	4.5	16	19.6	6	0.0		
33	2.8	78	0.0	14	4.5	17	8.3	7	4.0		
34	3.3	79	4.9	15	0.6	IC545		8	17.2		
35	2.9	80	4.9	16	3.5	PIN	VOLT	9	GND		
36	GND	IC002		17	3.5	1	0.7	10	10.4		
37	1.8	PIN	VOLT	18	4.8	2	13.5	11	0.0		
38	0.0	1	GND	19	4.8	3	-12.2	12	4.6		
39	0.1	2	GND	20	GND	4	-13.3	13	N/C		
40	2.0	3	GND	21	9	5	0.2	14	163.6		
41	1.6	4	GND	22	4.5	6	13.8	15	153.5		
42	3.3	5	4.8	23	3.8	7	0.7	16	157.6		
43	N/C	6	4.8	24	3.9			17	N/C		
								18	340.0		

All voltages are in V.

A BOARD TRANSISTOR VOLTAGE LIST

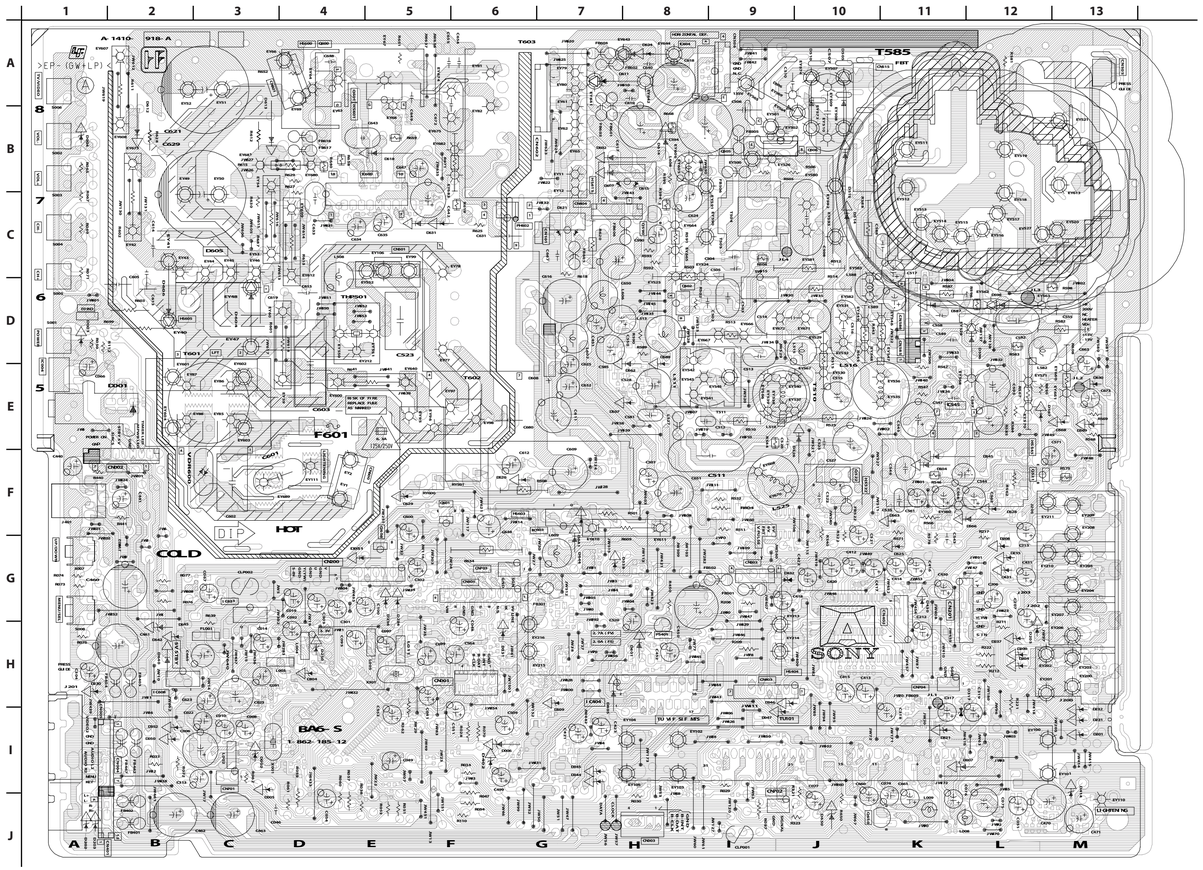
	B	C	E		B	C	E
Q002	0.0	2.0	GND	Q411	0.0	5.8	GND
Q004	3.8	9.0	4.4	Q412	0.1	0.1	GND
Q005	5.1	0.8	5.0	Q501	0.0	14.3	GND
Q006	0.0	0.0	GND	Q502	0.0	74.1	GND
Q008	0.0	2.6	GND	Q503	2.9	0.0	9.0
Q009	0.0	5.2	GND	Q504	0.0	0.0	GND
Q300	1.8	9.0	2.4	Q505	0.0	131.8	0.0
Q301	3.6	2.1	3.6	Q521	0.0	3.8	GND
Q303	3.6	GND	2.8	Q522	0.1	-2.1	0.0
Q304	3.6	GND	2.9	Q531	0.0	0.0	GND
Q305	3.6	GND	3.0	Q533	1.5	GND	1.5
Q306	5.5	GND	4.9	Q572	0.0	2.6	GND
Q316	0.0	3.3	0.0	Q573	2.6	0.0	2.6
Q390	0.8	1.5	1.9	Q578	0.0	0.5	GND
Q391	0.6	3.3	1.5	Q590	133.7	0.0	134.2
Q400	0.0	0.1	GND	Q604	30.6	11.6	30.2
Q401	0.0	0.1	GND	Q608	0.0	6.7	GND
Q404	0.0	0.0	GND	Q650	5.8	9.0	5.0

All voltages are in V.

	D	G	S
Q600	313.0	160.0	156.0
Q601	155.0	4.9	0.0

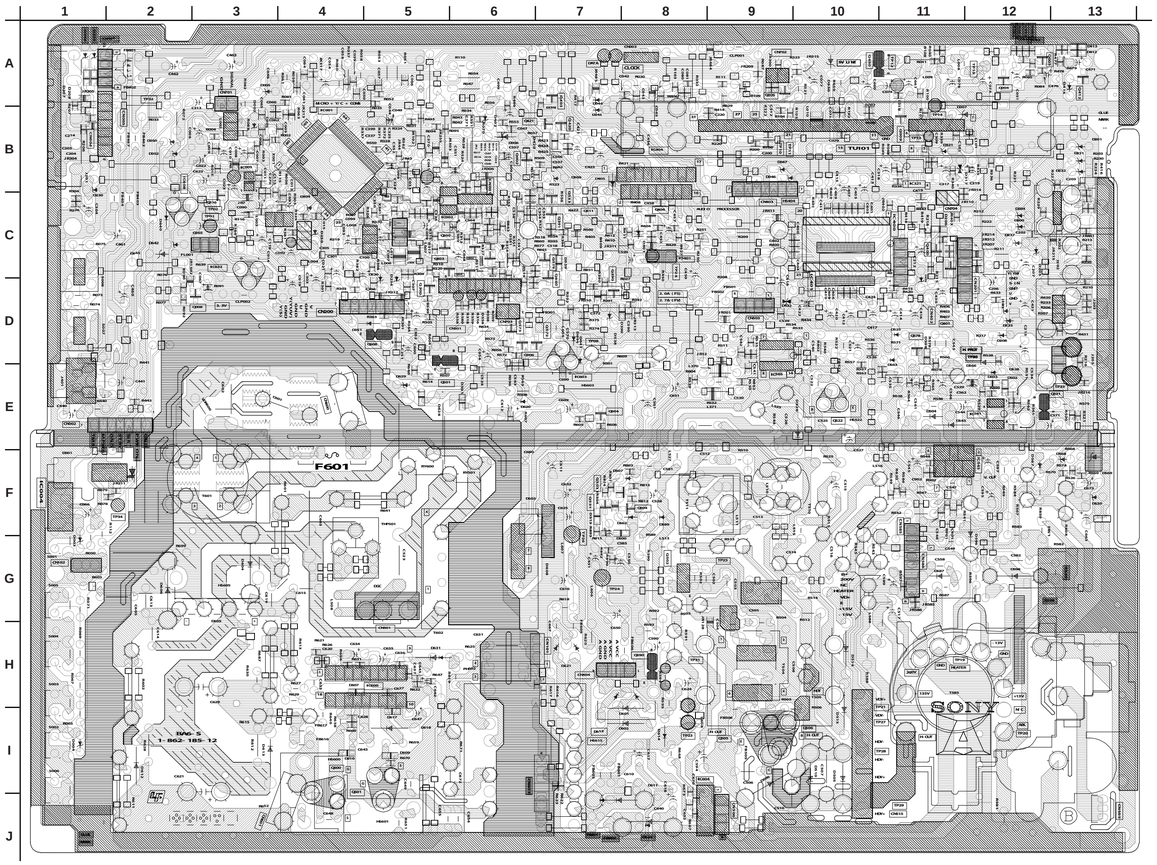
A [TUNING CONTROL, Y/CJ, POWER SUPPLY, TUNER/IF, DEFLECTION, AUDIO, MTS]

COMPONENT SIDE



A [TUNING CONTROL, Y/CJ, POWER SUPPLY, TUNER/IF, DEFLECTION, AUDIO, MTS]

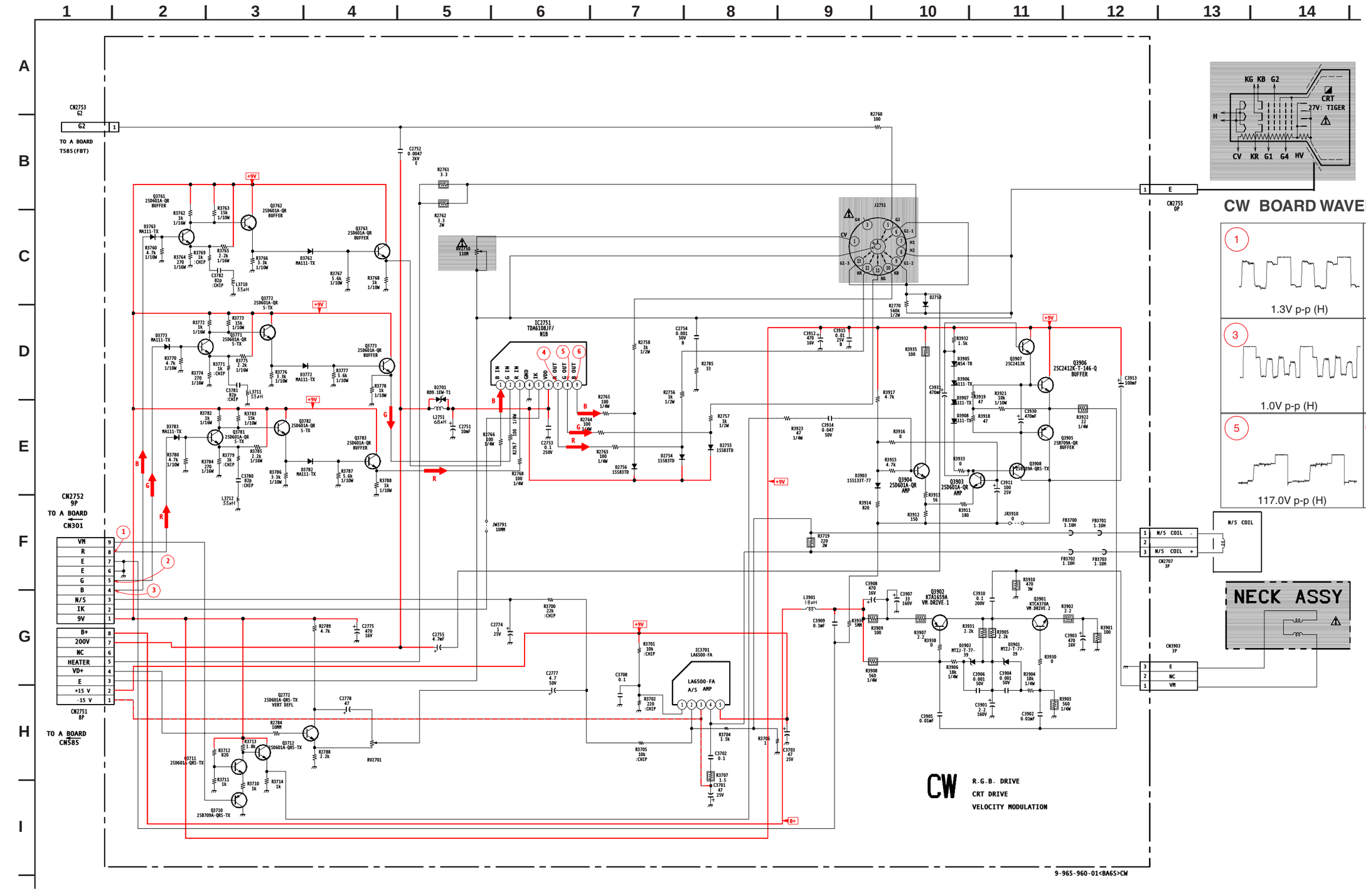
CONDUCTOR SIDE



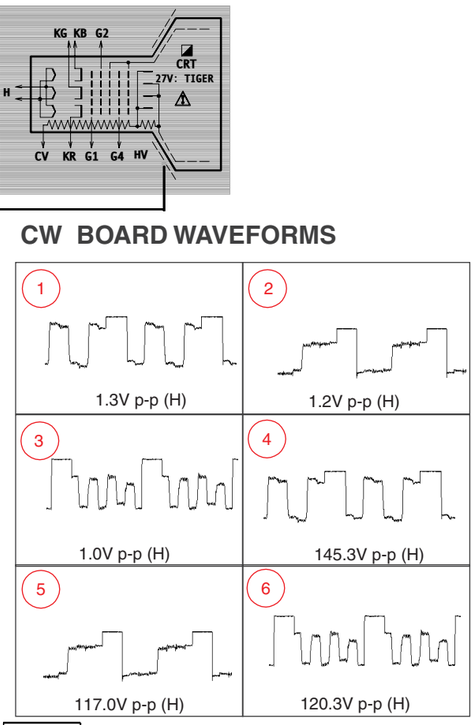
A BOARD LOCATOR LIST CONDUCTOR SIDE

DIODE		D230	C1	D507	F8	D603	F7	IC002	C5	Q303	C5	Q522	E10
D002	B3	D231	B13	D508	D11	D604	G3	IC003	B3	Q304	D6	Q531	F7
D003	G1	D232	B13	D510	I10	D605	G3	IC321	B11	Q305	C6	Q533	C7
D004	I1	D234	D5	D513	F7	D606	G3	IC400	C10	Q306	B9	Q572	D7
D005	A3	D235	D12	D514	H10	D611	J8	IC401	C10	Q316	C3	Q573	D6
D006	B6	D236	D5	D515	H10	D612	I2	IC404	B8	Q390	D7	Q578	D11
D007	B11	D237	C12	D525	D11	D613	I4	IC545	F11	Q391	C7	Q590	H8
D045	B7	D317	B11	D526	E10	D614	I8	IC561	E12	Q400	C11	Q600	I4
D046	B9	D321	B11	DIODE		D615	I7	IC565	E9	Q401	D11	Q601	I5
D047	B9	D351	C6	D528	E12	D618	I5	IC600	H5	Q403	A7	Q604	E8
D050	B2	D390	D8	D545	E11	D620	E6	IC603	D7	Q404	C8	Q608	D5
D051	D4	D401	C8	D558	D6	D621	H7	IC604	I9	Q411	C7	Q650	A10
D052	B2	D405	B7	D559	C7	D624	J8	IC608	B2	Q412	A13	Q860	C7
D200	C12	D412	A13	D562	F8	D628	E5	IC633	C3	Q420	B7		
D201	B13	D414	A13	D563	D11	D629	E5	TRANSISTORS		Q421	B6		
D202	A1	D420	B6	D566	E12	D631	H6	Q002	B6	Q501	E6		
D203	A1	D430	D11	D567	F12	D641	D7	Q004	A12	Q502	G8		
D204	B12	D431	D12	D568	F13	D642	C2	Q005	A12	Q503	F7		
D205	C12	D432	D9	D569	F13	D644	D7	Q006	D7	Q504	F8		
D206	C11	D500	G7	D587	G11	D645	C2	Q008	D3	Q505	I9		
D207	A11	D501	E6	D589	F8	D650	B10	Q009	B11	Q506	I10		
D208	D12	D505	I10	D596	G12	IC		Q300	D5	Q519	C7		
D209	A1	D506	I9	D598	G12	IC001	B4	Q301	C6	Q521	E12		

CW BOARD SCHEMATIC DIAGRAM



CW BOARD WAVEFORMS



CW BOARD IC VOLTAGE LIST

IC3701	
PIN	VOLT
1	0.3
2	0.3
3	-15.0
4	0.5
5	15.0
IC2751	
PIN	VOLT
1	2.0
2	2.0
3	2.4
4	GND
5	3.7
6	200.0
7	136.0
8	142.0
9	140.0

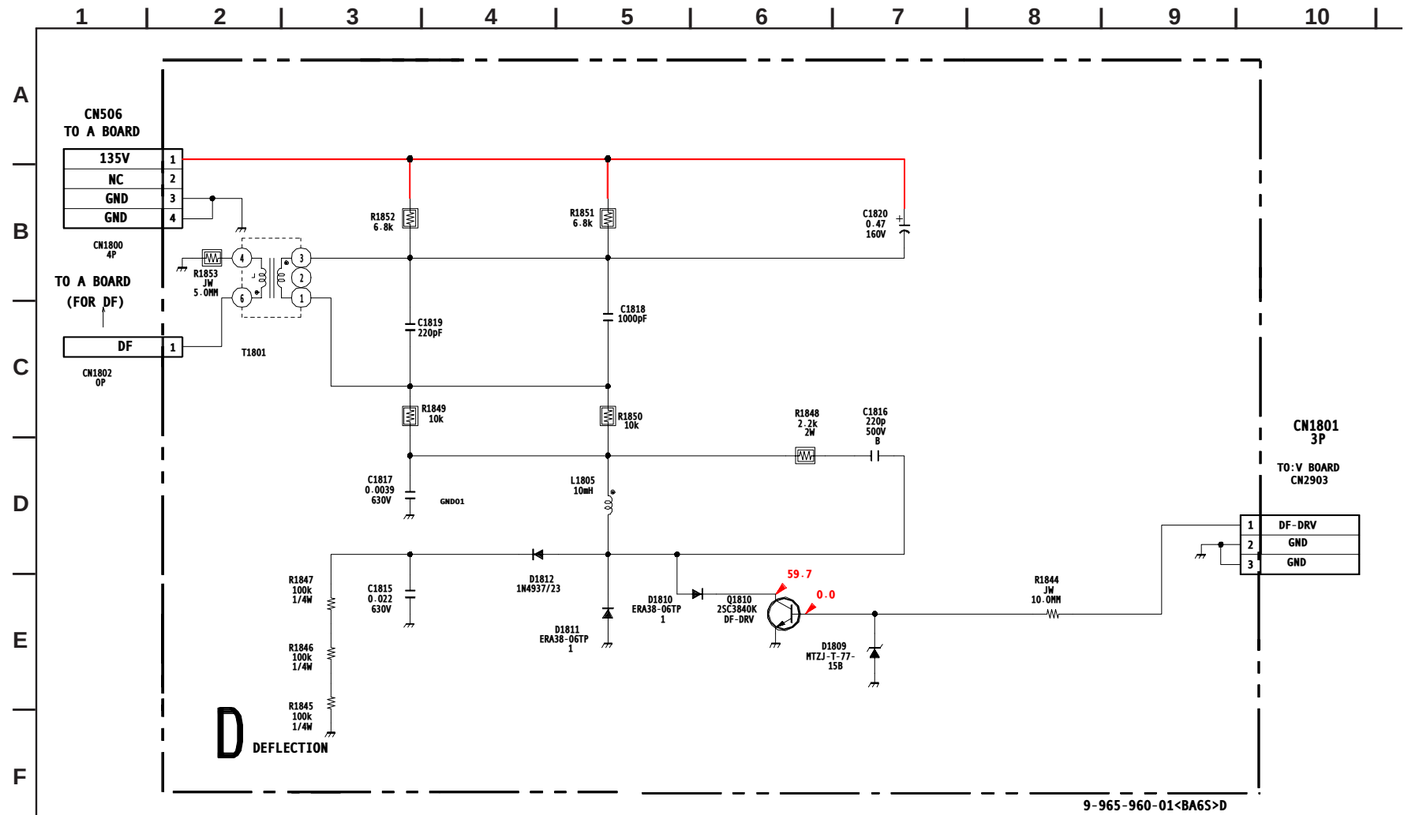
All voltages are in V.

CW BOARD TRANSISTOR VOLTAGE LIST

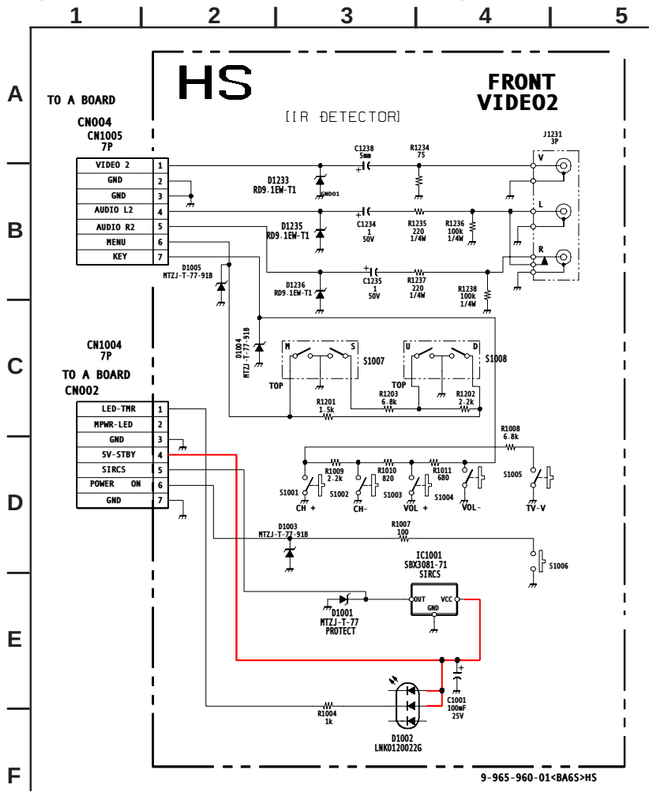
	B	C	E		B	C	E
Q2772	1.5	7.1	0.9	**Q3781**	2.2	3.9	2.9
Q3710	1.8	0.0	2.5	**Q3782**	3.3	9.0	3.9
Q3711	5.0	5.6	4.4	**Q3783**	2.1	9.0	2.7
Q3712	0.0	0.0	0.0	**Q3901**	0.9	67.0	0.4
Q3761	2.2	3.8	2.9	**Q3902**	134.0	67.0	134.0
Q3762	3.1	9.0	3.8	**Q3903**	1.8	5.4	2.4
Q3763	2.0	9.0	2.6	**Q3904**	1.8	9.0	2.4
Q3771	2.2	3.8	2.9	**Q3905**	5.7	GND	5.4
Q3772	3.2	9.0	3.8	**Q3906**	5.7	9.0	6.1
Q3773	2.0	9.0	2.6	**Q3907**	5.3	9.1	5.9
				Q3908	4.9	0.0	5.3

All voltages are in V.

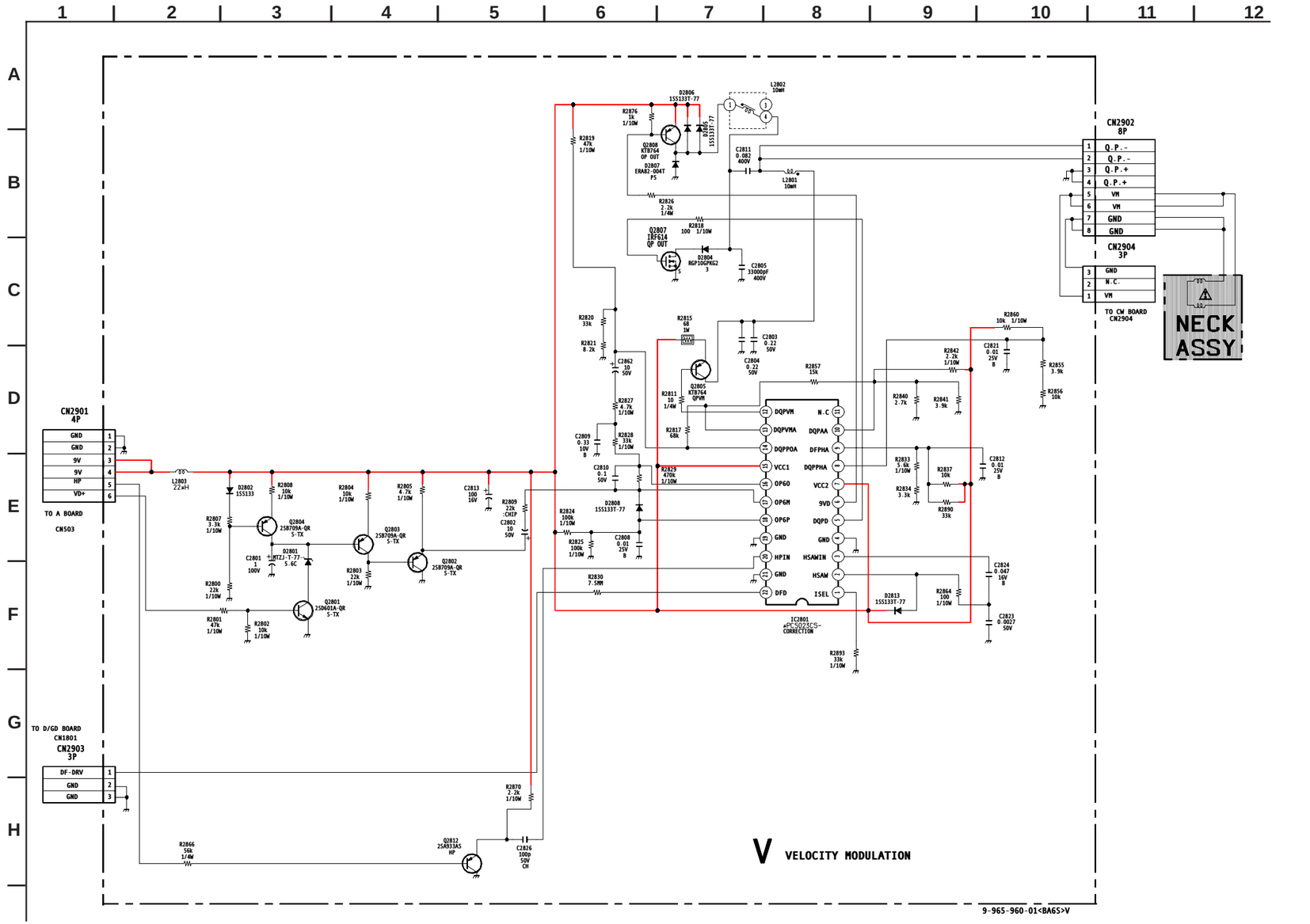
D BOARD SCHEMATIC DIAGRAM (ALL EXCEPT KV-27FA310/29FA310)



HS BOARD SCHEMATIC DIAGRAM
(ALL EXCEPT KV-27FA310/29FA310)



V BOARD SCHEMATIC DIAGRAM



V BOARD TRANSISTOR VOLTAGE LIST

	B	C	E
Q2801	0	3.1	GND
Q2802	0	GND	4.1
Q2803	6.6	0	7.2
Q2804	7.4	6.6	8.0
Q2805	3.5	1.8	4.2
Q2808	8.6	4.3	9.0
Q2812	1.3	GND	2.0

	D	G	S
Q2807	9.5	6.3	GND

All voltages are in V.

V BOARD IC VOLTAGE LIST

IC2801		11	N/C
PIN	**VOLT**	12	3..5
1	7.4	13	3.8
2	2.3	14	4.5
3	4.8	15	9.0
4	GND	16	4.6
5	6.3	17	4.6
6	4.5	18	4.5
7	9.0	19	GND
8	5.8	20	4.8
9	4.6	21	GND
10	4.8	22	0.3

All voltages are in V.

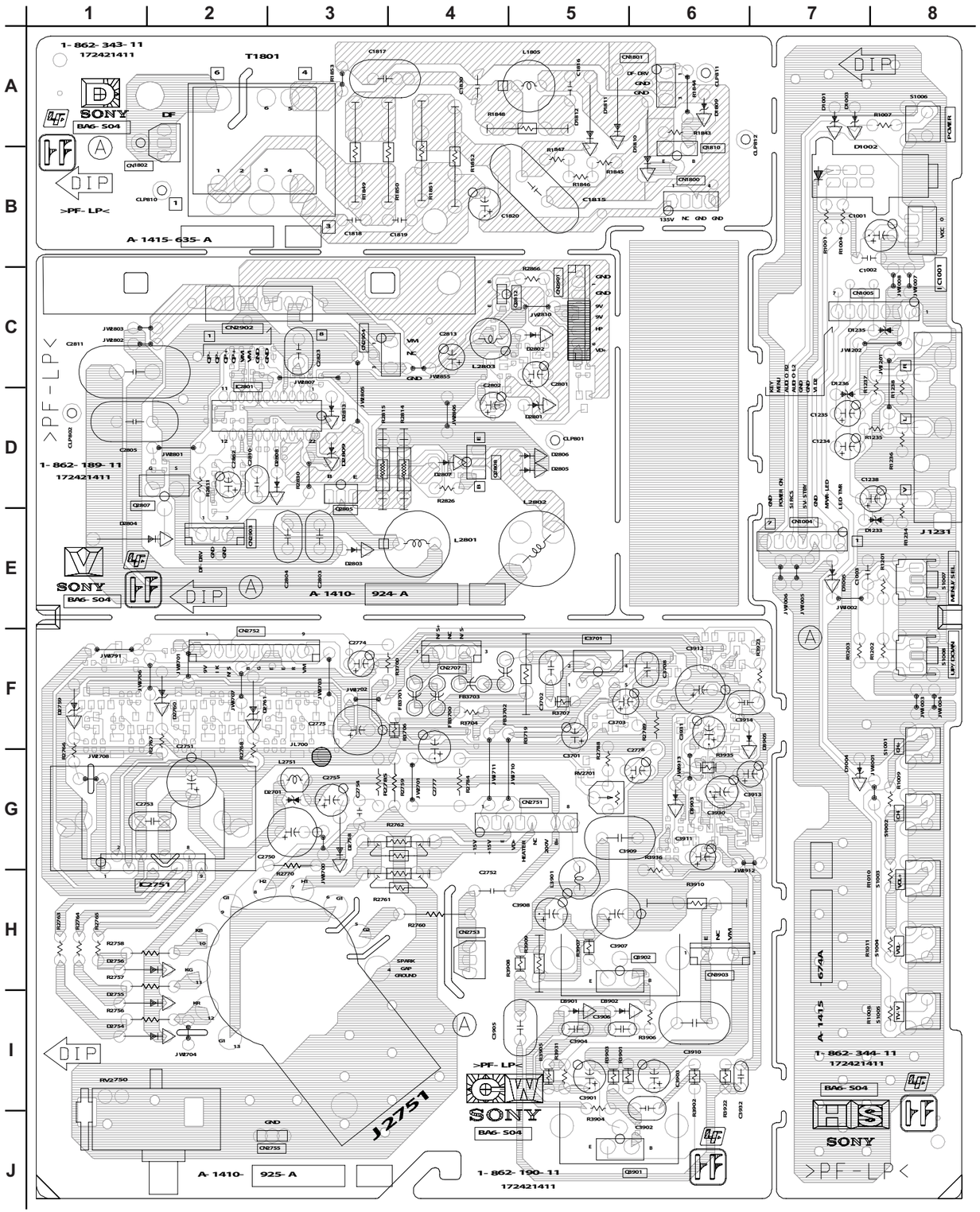
CW [RGB DRIVE, CRT DRIVE, VELOCITY MODULATION]

D [DEFLECTION] (ALL EXCEPT KV-27FA310/29FA310)

HS [IR DETECTOR, FRONT VIDEO2] (ALL EXCEPT KV-27FA310/29FA310)

V [VELOCITY MODULATION]

COMPONENT SIDE



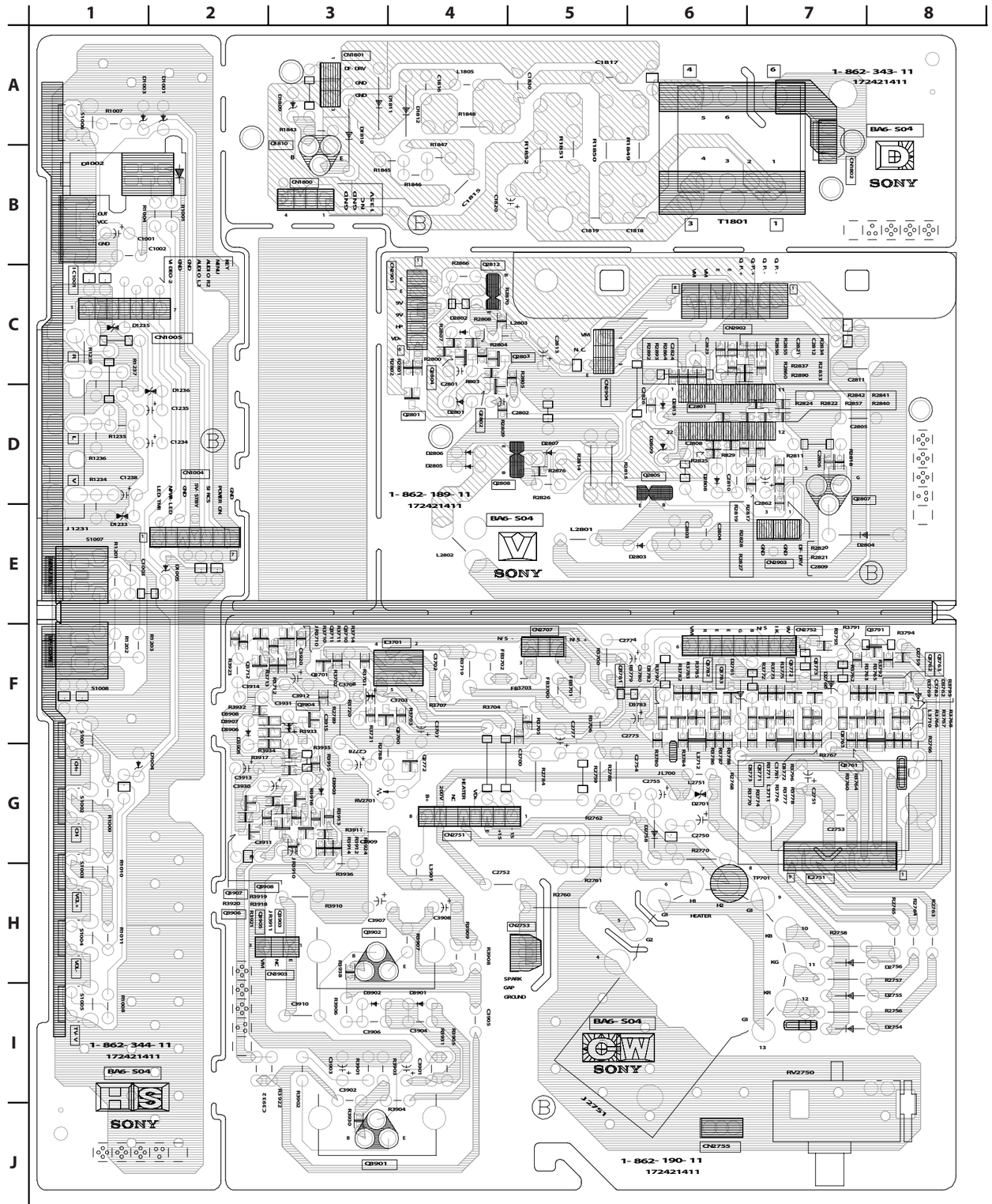
CW [RGB DRIVE, CRT DRIVE, VELOCITY MODULATION]

D [DEFLECTION] (ALL EXCEPT KV-27FA310/29FA310)

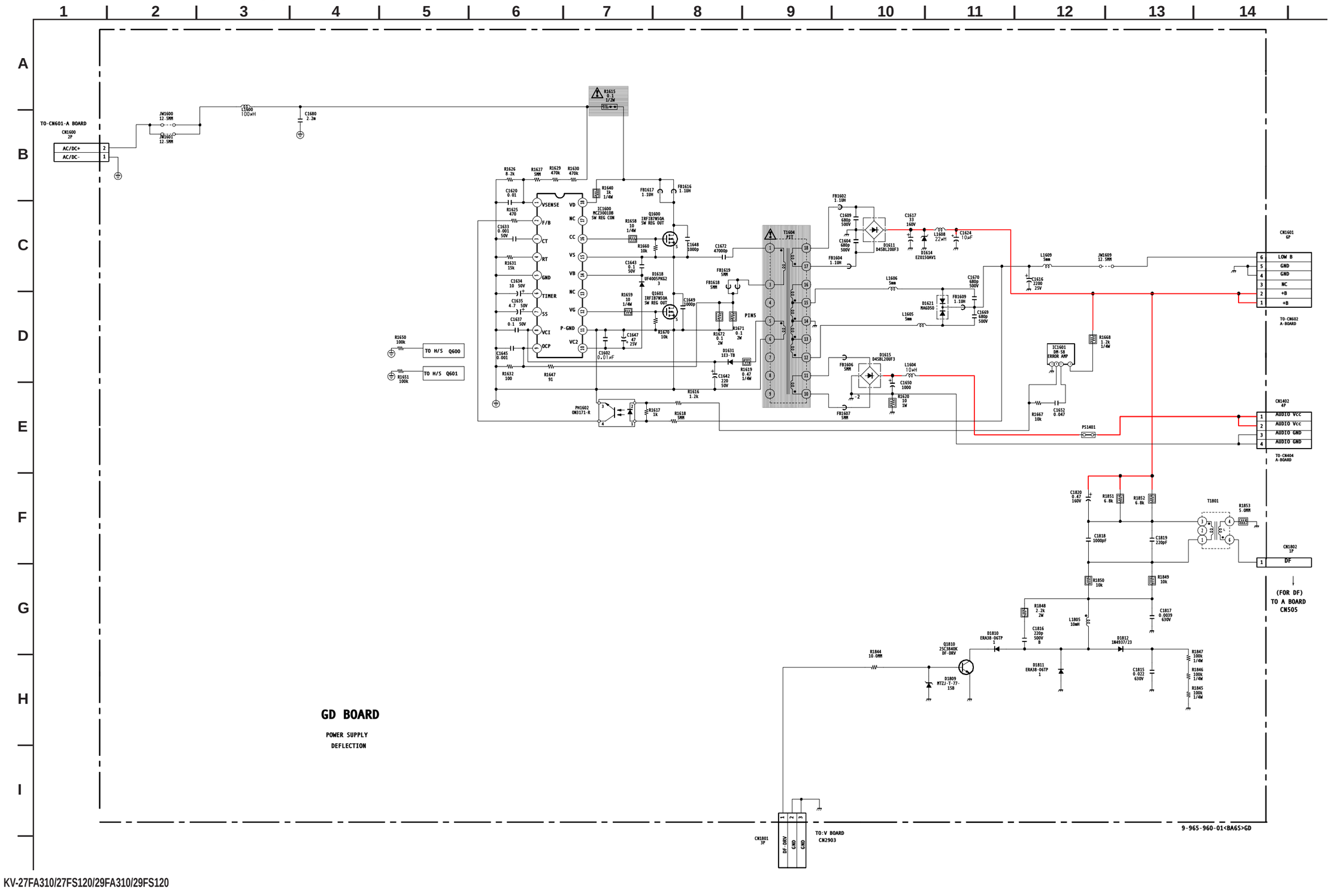
HS [IR DETECTOR, FRONT VIDEO2] (ALL EXCEPT KV-27FA310/29FA310)

V [VELOCITY MODULATION]

CONDUCTOR SIDE



GD BOARD SCHEMATIC DIAGRAM (KV-27FA310/29FA310 ONLY)



GD BOARD IC VOLTAGE LIST

IC1600		IC1601	
PIN	VOLT	PIN	VOLT
1	2.5	1	133.7
2	1.8	2	N/C
3	2.2	3	2.5
4	2.5	4	11.3
5	GND	5	GND
6	0.0		
7	4.0		
8	17.2		
9	GND		
10	10.4		
11	0.0		
12	4.6		
13	N/C		
14	163.6		
15	153.5		
16	157.6		
17	N/C		
18	340.0		

All voltages are in V.

GD BOARD TRANSISTOR VOLTAGE LIST

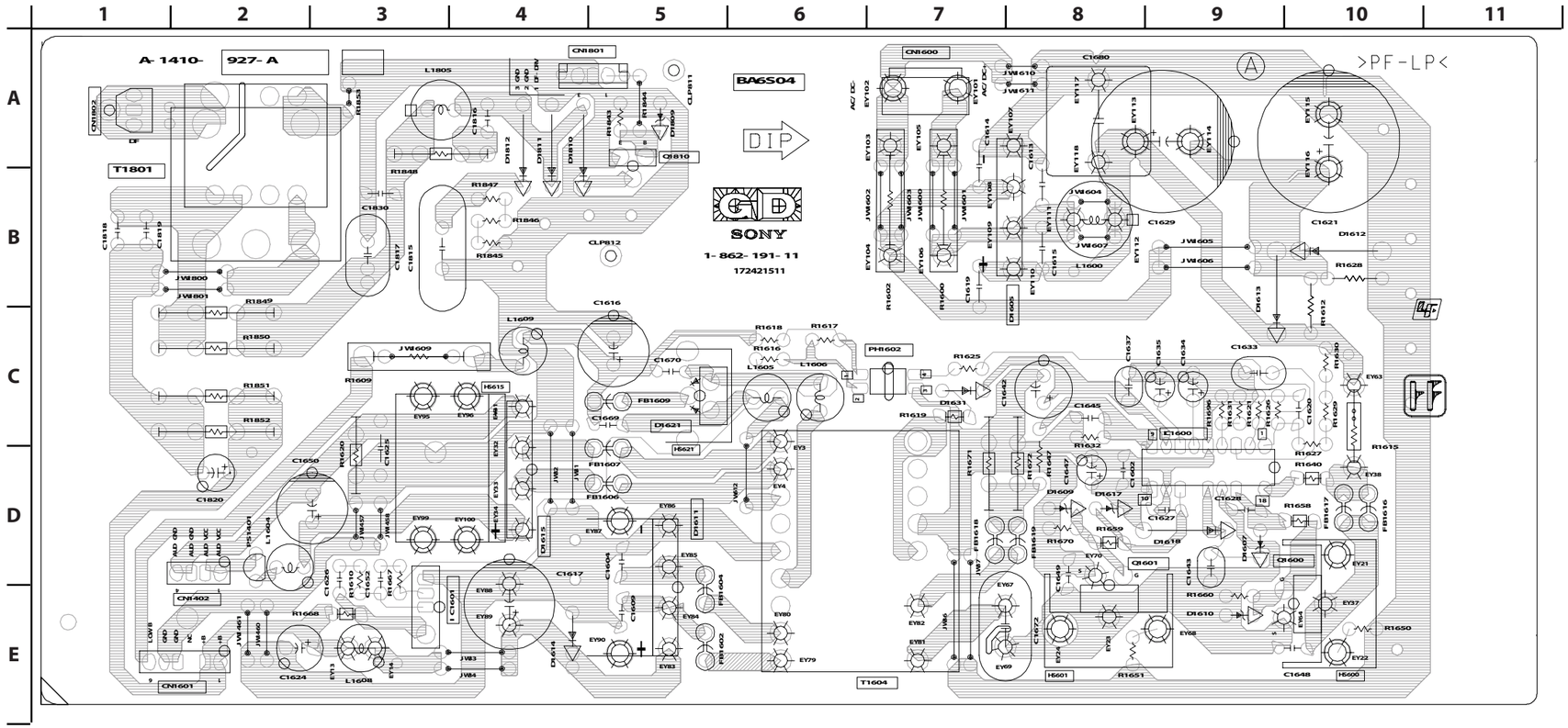
	D	G	S
Q1600	313.0	160.0	156.0
Q1601	155.0	4.9	0.0

	B	C	E
Q1810	0.0	59.7	GND

All voltages are in V.

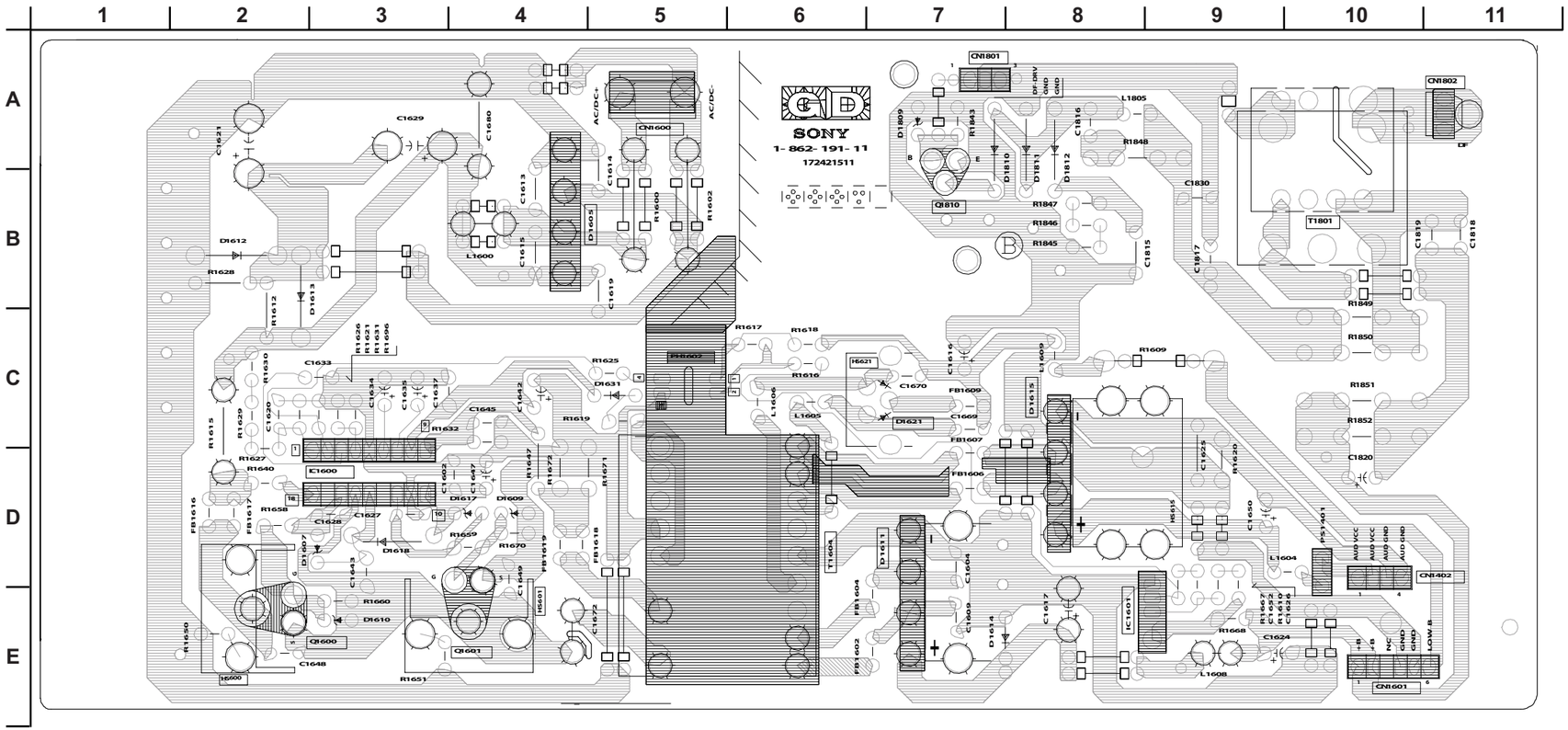
GD [POWER SUPPLY, DEFLECTION]

COMPONENT SIDE (KV-27FA310/29FA310 ONLY)

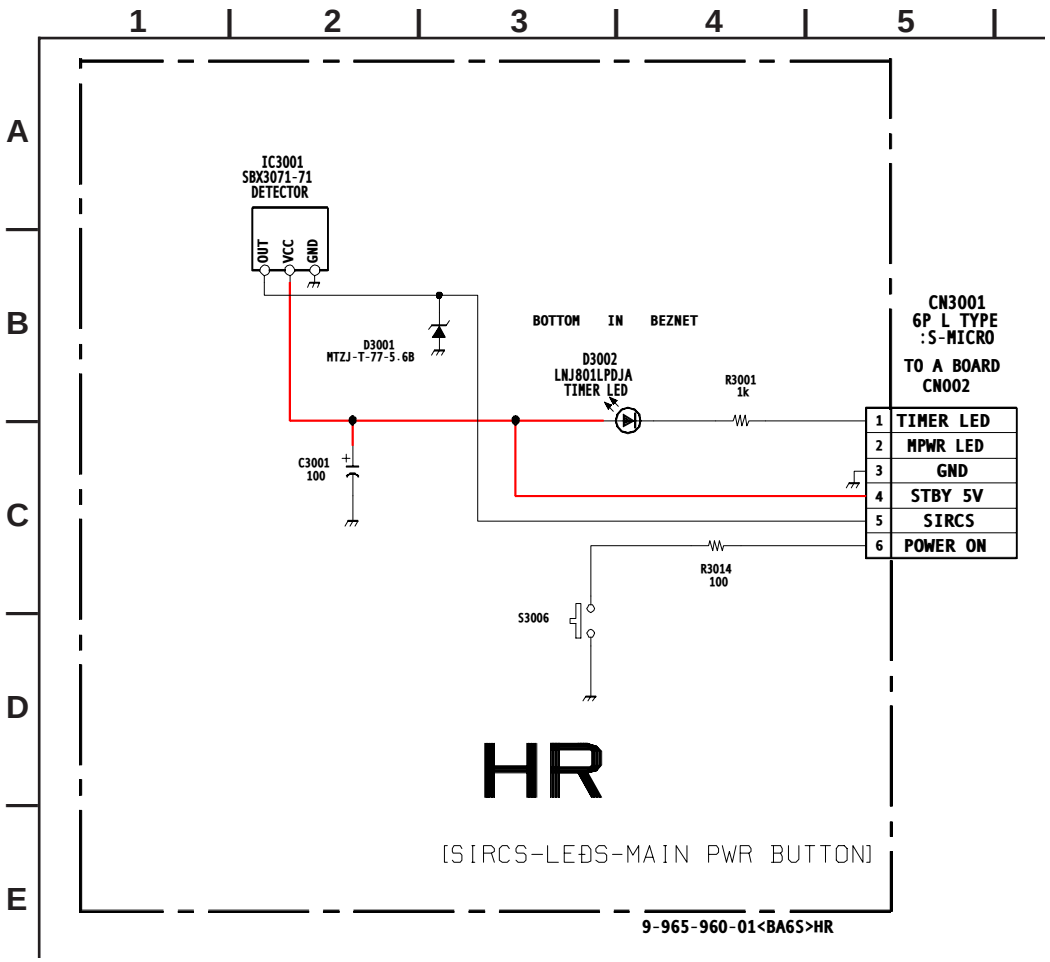


GD [POWER SUPPLY, DEFLECTION]

CONDUCTOR SIDE (KV-27FA310/29FA310 ONLY)

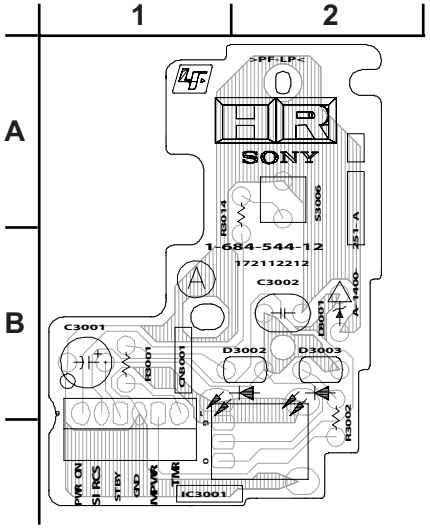


HR BOARD SCHEMATIC DIAGRAM (KV-27FA310/29FA310 ONLY)



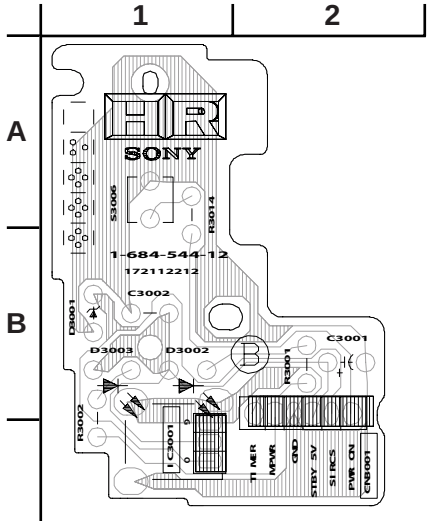
HR [SIRC, LEDS, MAIN POWER BUTTON]

COMPONENT SIDE (KV-27FA310/29FA310 ONLY)

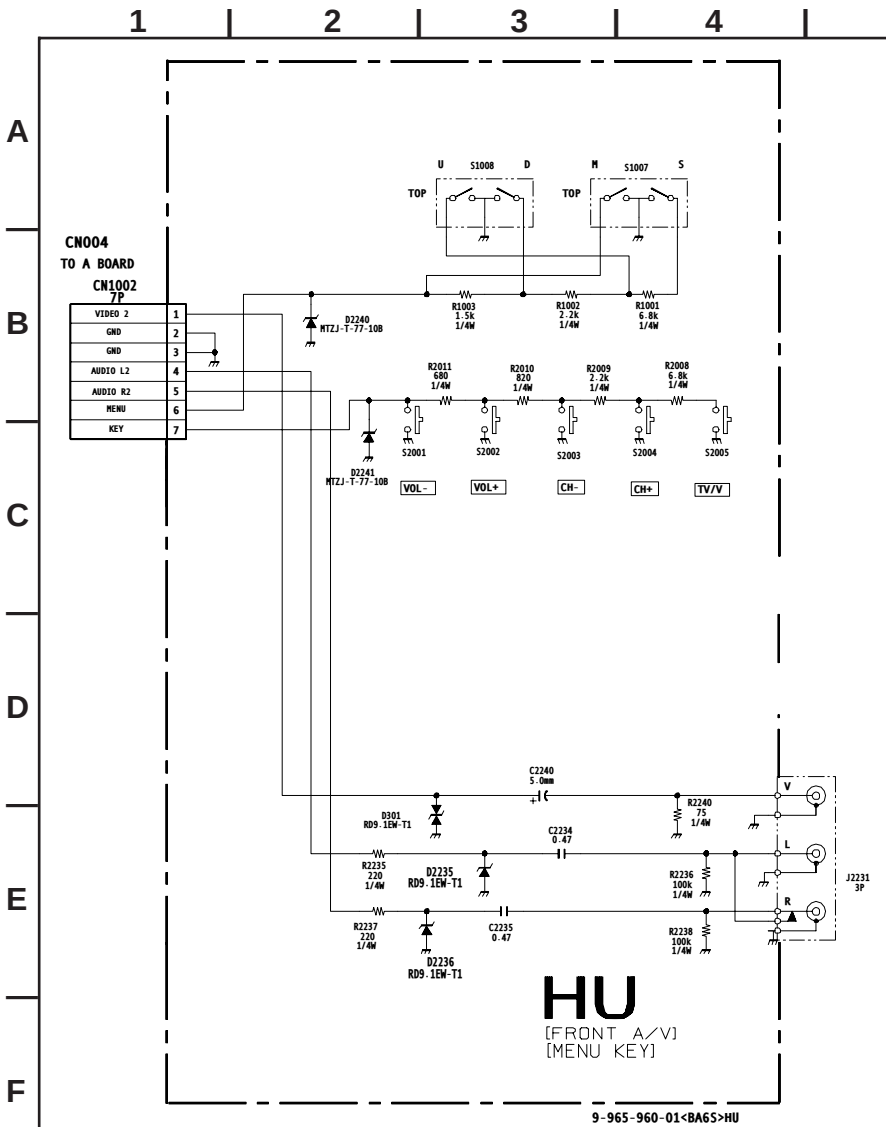


HR [SIRC, LEDS, MAIN POWER BUTTON]

CONDUCTOR SIDE (KV-27FA310/29FA310 ONLY)



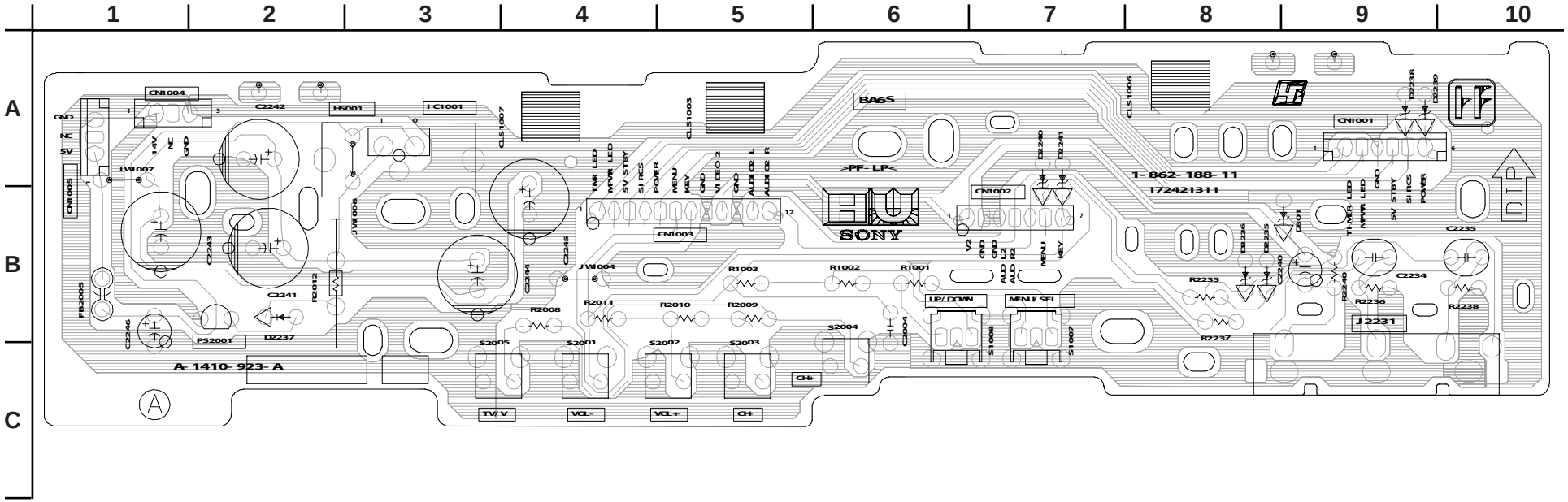
HU BOARD SCHEMATIC DIAGRAM (KV-27FA310/29FA310 ONLY)



HU

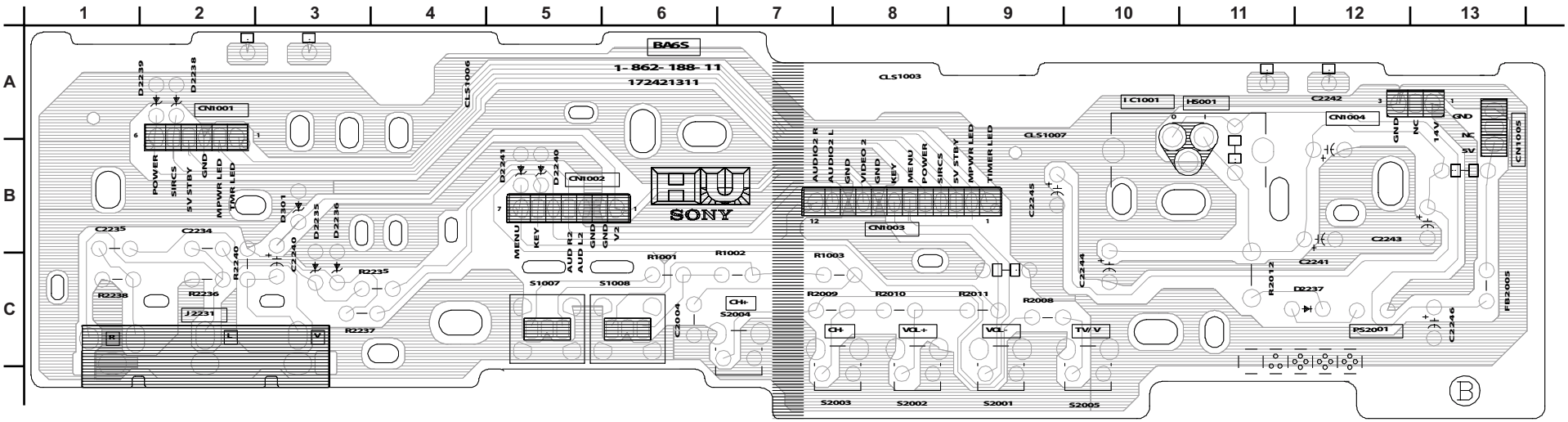
[FRONT A/V, MENU KEY]

COMPONENT SIDE (KV-27FA310/29FA310 ONLY)

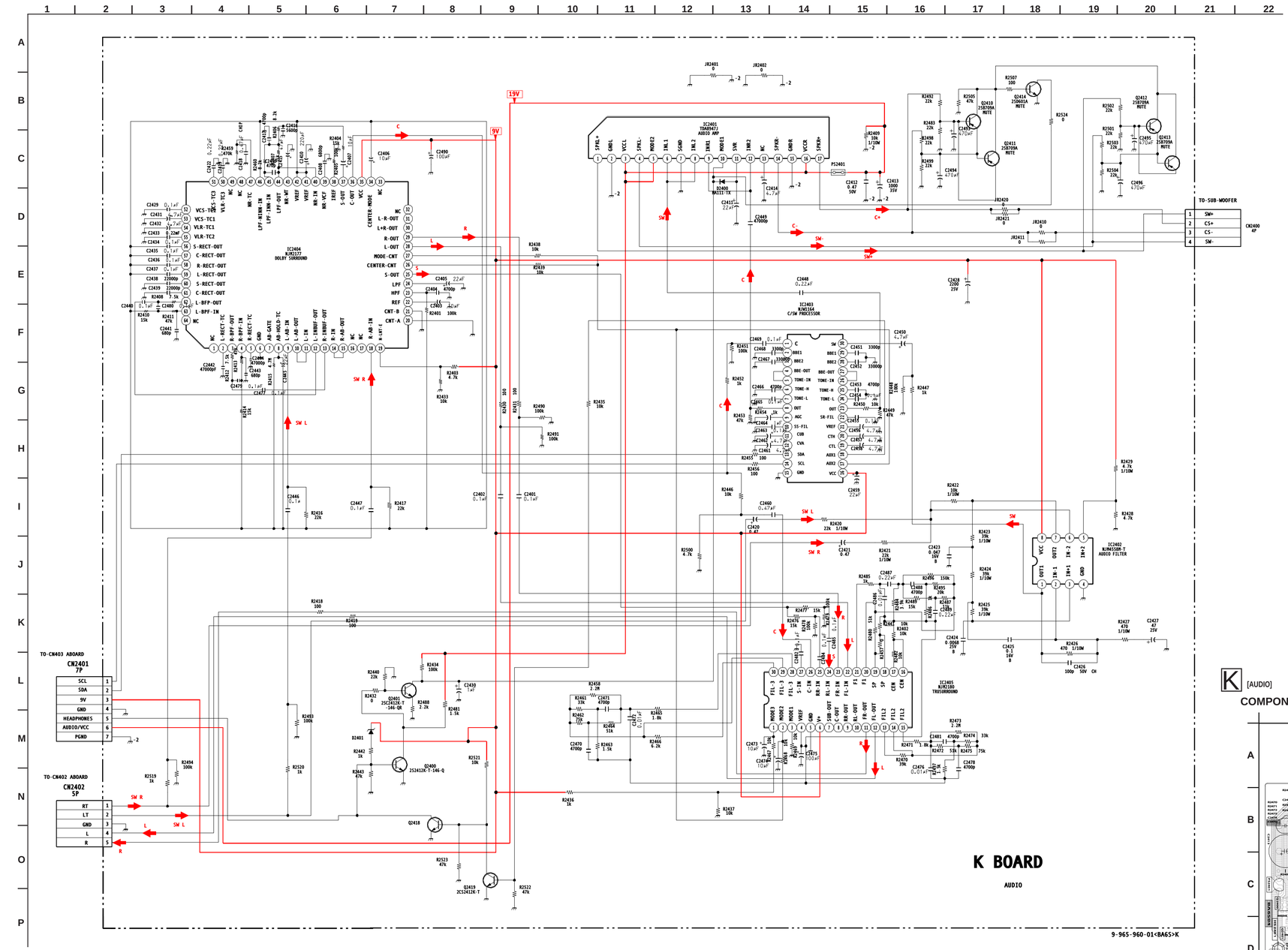


HU [FRONT A/V, MENU KEY]

CONDUCTOR SIDE (KV-27FA310/29FA310 ONLY)



K BOARD SCHEMATIC DIAGRAM (KV-27FA310/29FA310 ONLY)



K BOARD IC VOLTAGE LIST

IC2401		IC2403		28	4.5	25	4.0	54	4.0	17	4.5
PIN	VOLT	PIN	VOLT	29	4.5	26	4.0	55	4.0	18	4.5
1	8.3	1	4.5	30	4.5	27	4.37	56	4.0	19	4.5
2	GND	2	4.5	IC2404		28	4.0	57	4.0	20	4.5
3	19.6	3	4.5	PIN	VOLT	29	4.0	58	4.0	21	4.5
4	8.3	4	4.5	1	n/c	30	n/c	59	4.0	22	4.5
5	19.6	5	4.5	2	4.0	31	n/c	60	4.0	23	4.5
6	3.2	6	4.5	3	4.0	32	n/c	61	4.0	24	4.5
7	GND	7	4.5	4	4.0	33	n/c	62	4.0	25	4.5
8	0.0	8	4.5	5	4.0	34	4.0	63	4.0	26	4.5
9	3.2	9	1.0	6	GND	35	9.0	64	n/c	27	4.5
10	9.1	10	4.5	7	n/c	36	4.0	IC2405		28	4.5
11	9.7	11	3.4	8	3.8	37	4.0	PIN	VOLT	29	4.5
12	3.2	12	3.3	9	4.0	38	1.45	1	7.7	30	4.5
13	3.3	13	4.5	10	4.0	39	4.0	2	4.6	All voltages are in V.	
14	8.3	14	4.5	11	4.0	40	4.0	3	0.0		
15	GND	15	GND	12	4.0	41	4.0	4	4.5		
16	19.6	16	9.0	13	4.0	42	4.0	5	0.0		
17	8.3	17	4.9	14	4.0	43	4.0	6	9.0		
IC2402		18	0.0	15	4.0	44	4.0	7	n/c		
PIN	VOLT	19	3.88	16	n/c	45	4.0	8	n/c		
1	4.5	20	3.88	17	n/c	46	4.0	9	n/c		
2	4.5	21	4.5	18	4.0	47	0.0	10	n/c		
3	4.5	22	4.5	19	5.8	48	n/c	11	4.5		
4	GND	23	4.5	20	GND	49	n/c	12	4.5		
5	4.5	24	4.5	21	GND	50	4.0	13	4.5		
6	4.5	25	4.5	22	4.0	51	3.0	14	4.5		
7	4.5	26	4.5	23	2.65	52	3.0	15	4.5		
8	9.0	27	4.5	24	4.0	53	3.0	16	4.5		

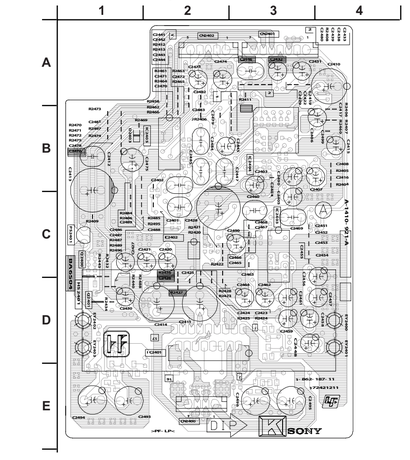
K BOARD TRANSISTOR VOLTAGE LIST

	B	C	E
Q2400	0.7	0.0	GND
Q2401	0.0	17.9	0.0
Q2410	4.8	0.0	4.8
Q2411	4.8	0.0	4.8
Q2412	4.8	0.0	4.9
Q2413	4.8	0.0	4.9
Q2414	0.0	0.2	GND
Q2418	0.0	0.7	GND
Q2419	0.0	0.0	GND

All voltages are in V.

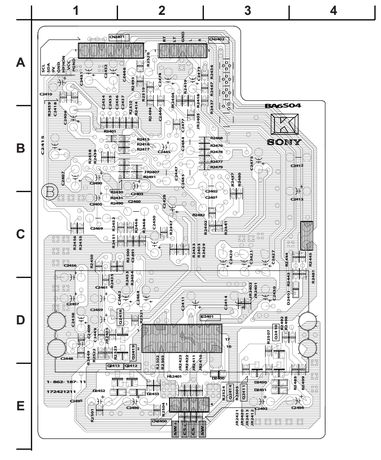
K [AUDIO]

COMPONENT SIDE (KV-27FA310/29FA310 ONLY)



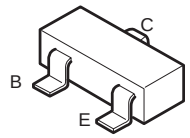
K [AUDIO]

CONDUCTOR SIDE (KV-27FA310/29FA310 ONLY)

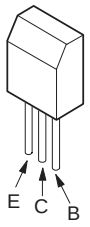


5-4. SEMICONDUCTORS

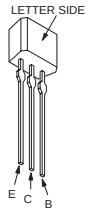
2SB709A-QRS-TX
2SD601A-QRS-TX



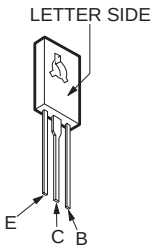
2SB734-T-34
2SC3209LK-TP



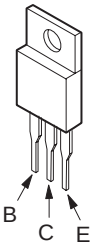
2SA1309A-QRSTA
2SC3311A-QRSTA
2SD2144S-TP-UVW



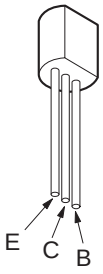
2SC3840K



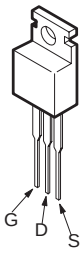
2SA1837



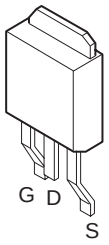
2SA1091O-TPE2



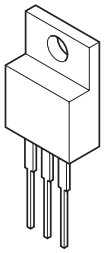
IRF614



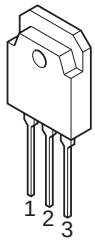
2SK2663



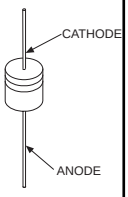
2SC4793



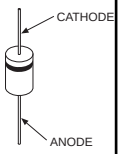
2SD2578-YB



ERA38-06TP1
ERA82-004TP5
1SS133T-77
D1NS0R-TA
MTZJ-T-77-12C
MTZJ-T-77-15B
MTZJ-T-77-33B
MTZJ-T-77-39



RU-1P
ERC06-15S
EGP20DPKG23
MTZJ-T-77-5.1C
MTZJ-T-77-5.6C
MTZJ-T-77-7.5A
MTZJ-T-77-10B
MTZJ-T-77-30D
RGP10-GPKG3
RGP02-17PKG23
RGP15GPKG23



ERB44-06TP1
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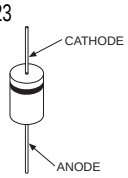
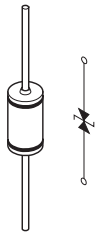
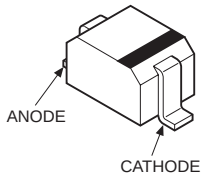
GP08DPKG23
RGP10GPKG23
RU4AM-T3



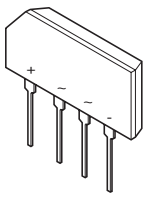
RD9.1EW-T1



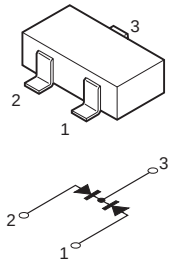
MA111-TX
UDZ-TE-17.5.1B
UDZ-TE-17.91B



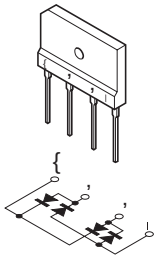
D2SB60A-F04



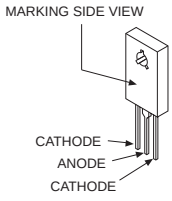
DAP202K-T-146



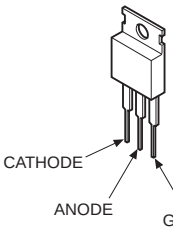
D4SB60L-F



D5LC20U



TF541M



SECTION 6: EXPLODED VIEWS

Components not identified by a part number or description are not stocked because they are seldom required for routine service.

The component parts of an assembly are indicated by the reference numbers in the far right column of the parts list and within the dotted lines of the diagram.

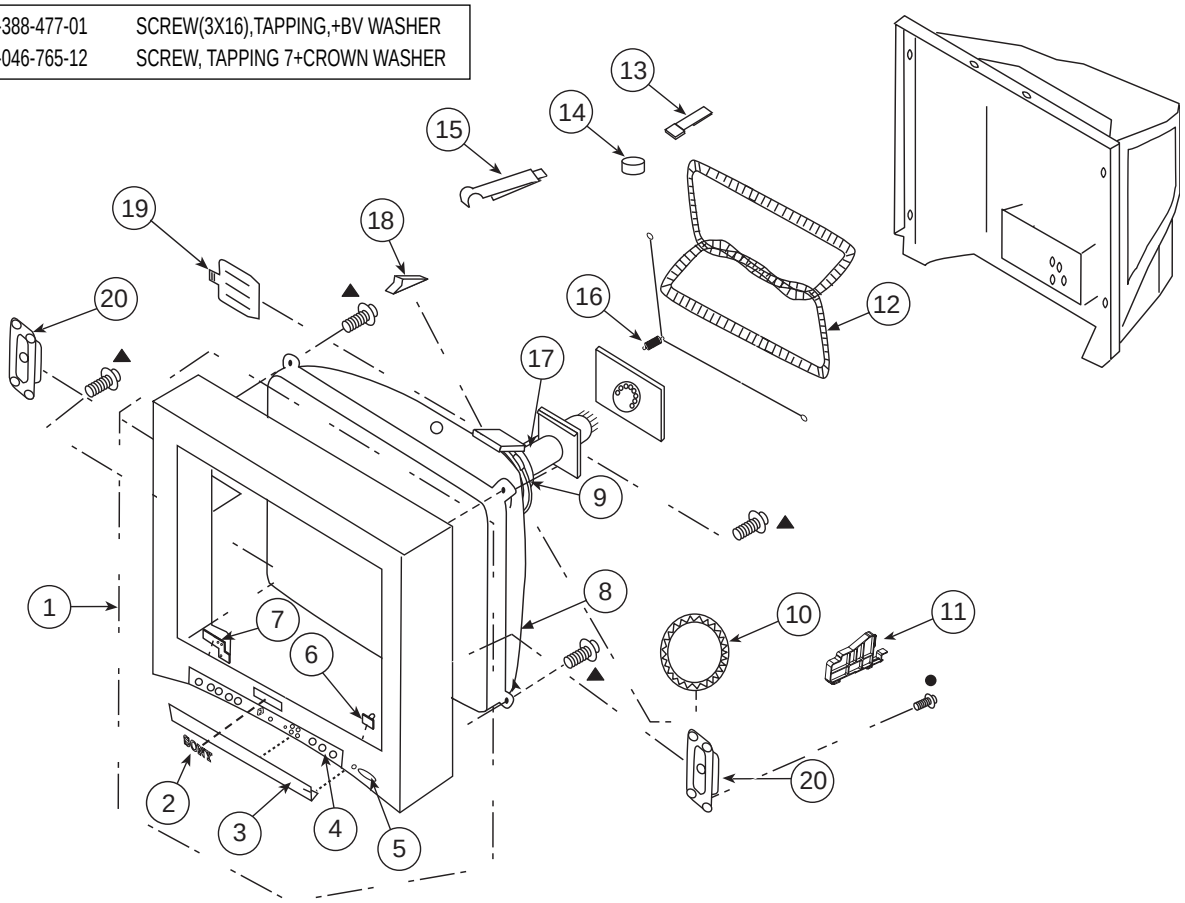
*** Items marked with an asterisk are not stocked since they are seldom required for routine service. Expect some delay when ordering these components.**

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-1. PICTURE TUBE (KV-27FS120/29FS120 ONLY)

● 4-388-477-01 SCREW(3X16),TAPPING,+BV WASHER
▲ 4-046-765-12 SCREW, TAPPING 7+CROWN WASHER



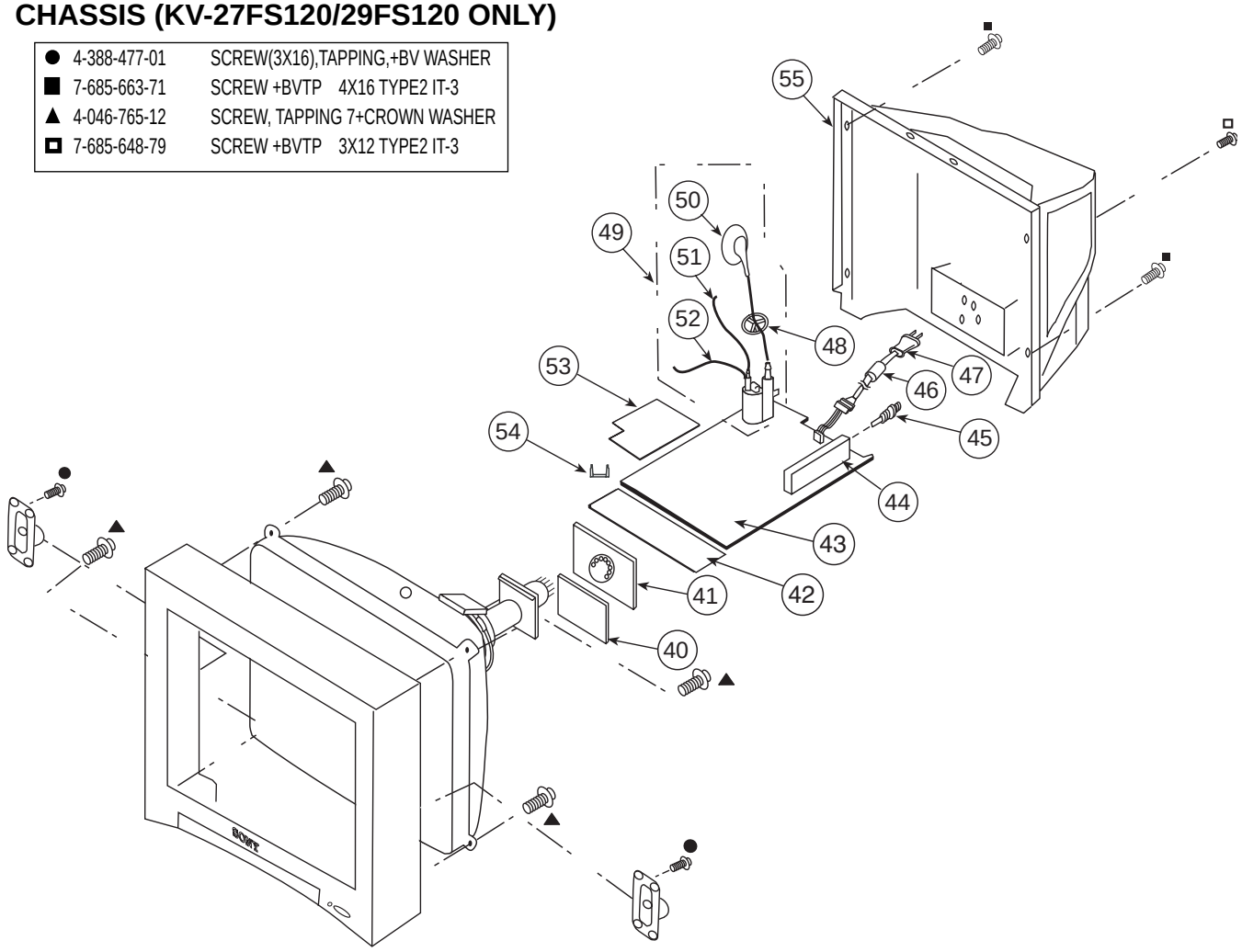
REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
1	X-4043-163-1	BEZNET, ASSY	[2-7]
2	4-046-160-31	EMBLEM, SONY NO.9	
3	4-089-056-11	DOOR	
4	4-089-016-01	LABEL, DOOR	
5	4-089-057-11	BUTTON, POWER	
6	4-089-058-01	GUIDE, LED	
* 7	4-083-303-01	SPRING, METAL	
⚠ 8	8-735-082-05	CRT 29RSN(SDP) (ALL EXCEPT KV-29FS120 L. SOUTH)	
⚠ 8	8-735-083-05	CRT 29RSN(SDP)(SOUTH) (KV-29FS120 L. SOUTH ONLY)	
⚠ 9	8-451-494-41	DY Y29RSA-V	
⚠ 10	1-452-896-11	COIL, NA ROTATION (RT-200)	
11	4-089-062-02	SUPPORTER, CRT	
⚠ 12	1-419-156-21	COIL, DEGAUSSING (ALL EXCEPT KV-29FS120 L. SOUTH)	
⚠ 12	1-419-523-21	COIL, DEGAUSSING (KV-29FS120 L. SOUTH ONLY)	
13	4-083-414-01	PIECE A(110), CONV CORRECT	
14	1-452-885-11	MAGNET, LANDING	
* 15	4-062-970-12	CLIP (29RSN), DGC	
16	4-036-329-01	SPRING (B), TENSION	
⚠ 17	8-453-011-11	NECK ASSEMBLY 299-M	
18	4-053-005-01	SPACER, DY	
19	4-081-170-01	PLATE, TLH CORRECTION	
20	1-825-206-11	LOUDSPEAKER (6X12CM)	

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-2. CHASSIS (KV-27FS120/29FS120 ONLY)

●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
□	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3



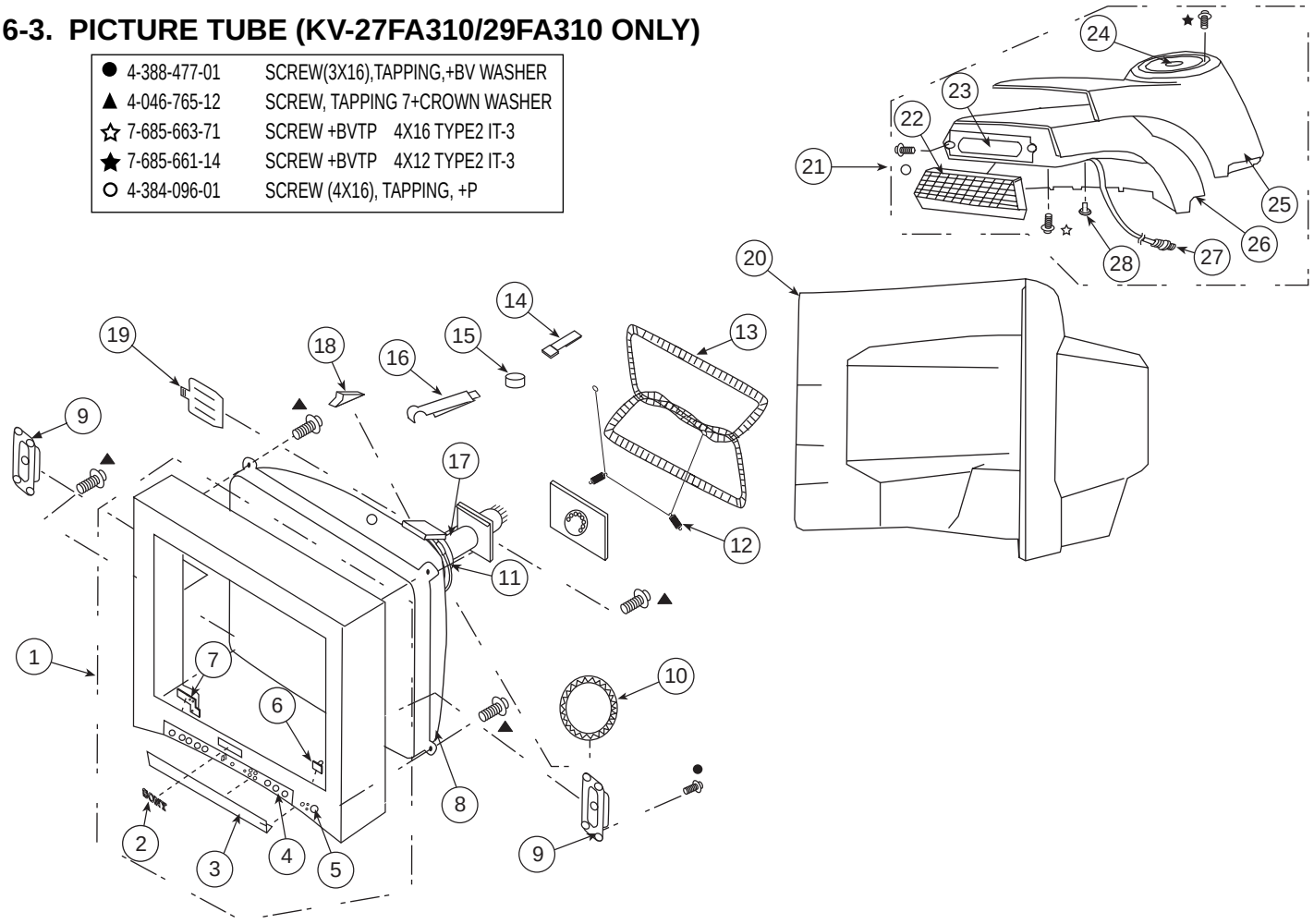
REF. NO.	PART NO.	DESCRIPTION [ASSEMBLY INCLUDES]
* 40	A-1410-924-A	V BOARD, MOUNTED
* 41	A-1410-925-A	CW BOARD, MOUNTED
* 42	A-1415-674-A	HS BOARD, MOUNTED
* 43	A-1052-931-A	A BOARD, COMPLETE (KV-29FS120 L. SOUTH ONLY)
		The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (See 50-52)
* 43	A-1302-967-A	A BOARD, COMPLETE (ALL EXCEPT KV-29FS120 L. SOUTH)
		The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (See 50-52)
⚠ 44	8-598-593-50	TUNER, FSS BTF-WA421
⚠ 45	1-766-374-11	PLUG, F-PIN
46	1-500-586-11	FILTER, CLAMP (FERRITE CORE) (KV-29FS120 L. SOUTH ONLY)
⚠ 47	1-824-069-11	CORD, AC POWER (WITH CONNECTOR) (ALL EXCEPT KV-29FS120 L. SOUTH)
⚠ 47	1-757-840-12	CORD, POWER (WITH CONNECTOR) (KV-29FS120 L. SOUTH ONLY)
48	4-084-918-01	HOLDER, HV CABLE
⚠ 49	1-453-310-21	FBT ASSY NX-4521//X4J4 [50-52]
⚠ 50	1-251-374-14	CAP ASSY, HIGH-VOLTAGE
⚠ 51	1-900-800-65	CONNECTOR ASSY, FOCUS LEAD
⚠ 52	1-900-803-22	WIRE ASSY, G2 LEAD
* 53	A-1415-635-A	D BOARD, MOUNTED
* 54	3-696-606-02	HINGE, VI
55	4-089-050-32	COVER, REAR

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-3. PICTURE TUBE (KV-27FA310/29FA310 ONLY)

●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
☆	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
★	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3
○	4-384-096-01	SCREW (4X16), TAPPING, +P



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
1	X-4043-169-2	BEZNET ASSY (KV-27FA310 ONLY)	[2-7]
1	X-4043-169-1	BEZNET ASSY (KV-29FA310 ONLY)	[2-7]
2	4-046-160-31	EMBLEM, SONY NO.9	
* 3	4-087-375-31	DOOR, CONTROL	
4	4-087-376-21	LABEL, FRONT TERMINAL	
5	4-087-150-41	BUTTON, POWER	
6	4-087-156-01	GUIDE, LIGHT	
7	4-087-374-11	SPRING, DOOR	
⚠ 8	8-735-082-05	CRT 29RSN(SDP) M68LNH050X (KV-27FA310 & KV-29FA310 L. NORTH ONLY)	
⚠ 8	8-735-083-05	CRT 29RSN(SDP)(SOUTH) (KV-29FA310 L. SOUTH ONLY)	
9	1-825-417-21	LOUDSPEAKER (16X12CM)	
⚠ 10	1-452-896-11	COIL, NA ROTATION (RT-200)	
⚠ 11	8-451-494-41	DY Y29RSA-V	
12	4-036-329-01	SPRING (B), TENSION	
⚠ 13	1-419-156-22	COIL, DEGAUSSING (KV-27FA310 ONLY)	
⚠ 13	1-419-156-21	COIL, DEGAUSSING (KV-29FA310 L. NORTH ONLY)	

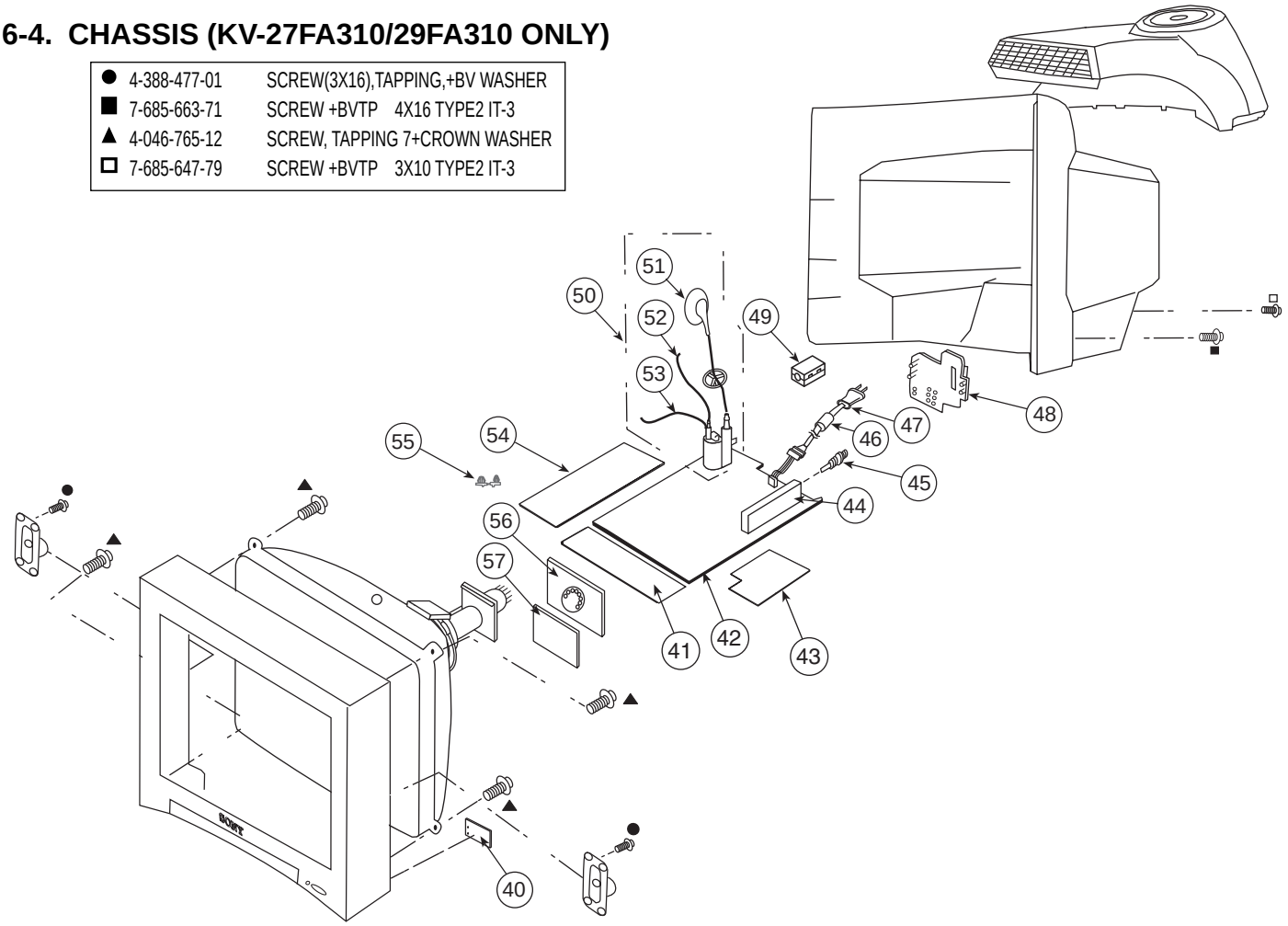
REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
⚠ 13	1-419-523-21	COIL, DEGAUSSING (KV-29FA310 L. SOUTH ONLY)	
14	4-083-414-01	PIECE A(110), CONV CORRECT	
15	1-452-885-11	MAGNET, LANDING	
* 16	4-062-970-12	CLIP (29RSN), DGC	
⚠ 17	8-453-011-11	NECK ASSEMBLY 299-M	
18	4-053-005-01	SPACER, DY	
19	4-081-170-01	PLATE, TLH CORRECTION	
20	4-093-996-12	COVER, REAR (KV-27FA310 ONLY)	
20	4-093-996-11	COVER, REAR (KV-29FA310 ONLY)	
21	A-1606-603-A	SPEAKER ASSY (29)	[22-28]
* 22	4-101-820-01	GRILLE, CENTER (W29)	
23	1-825-809-11	LOUDSPEAKER (19.2CMX4.2CM)	
24	1-825-807-11	LOUDSPEAKER (13CM)	
* 25	X-2022-510-1	TOP ASSY (W29), COVER	
* 26	4-101-830-01	COVER, BOTTOM (W29)	
* 27	1-828-903-11	CONNECTION CABLE	
* 28	4-068-528-41	FOOT	

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

6-4. CHASSIS (KV-27FA310/29FA310 ONLY)

●	4-388-477-01	SCREW(3X16),TAPPING,+BV WASHER
■	7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3
▲	4-046-765-12	SCREW, TAPPING 7+CROWN WASHER
□	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3



REF. NO.	PART NO.	DESCRIPTION [ASSEMBLY INCLUDES]
* 40	A-1415-629-A	HR (VAR) BOARD, MOUNTED
*・・ 41	・A-1415-631-A	HU (VAR) BOARD, MOUNTED
* 42	A-1302-880-A	A BOARD, COMPLETE (KV-27FA310 & KV-29FA310 L. NORTH ONLY) The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (See 51-53)
* 42	A-1302-954-A	A BOARD, COMPLETE (KV-29FA310 L. SOUTH ONLY) The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. (See 51-53)
* 43	A-1410-921-A	K BOARD, MOUNTED
⚠ 44	8-598-593-50	TUNER, FSS BTF-WA421
⚠ 45	1-766-374-11	PLUG, F-PIN
46	1-500-586-11	FILTER, CLAMP (FERRITE CORE) (KV-29FA310 L. SOUTH ONLY)
⚠ 47	1-824-069-11	CORD, AC POWER (WITH CONNECTOR) (KV-27FA310 & KV-29FA310 L. NORTH ONLY)

REF. NO.	PART NO.	DESCRIPTION [ASSEMBLY INCLUDES]
⚠ 47	1-757-840-12	CORD, POWER (WITH CONNECTOR) (KV-29FA310 L. SOUTH ONLY)
* 48	4-087-877-41	TERMINAL BRACKET
49	1-500-082-11	CLAMP, SLEEVE FERRITE
⚠ 50	1-453-310-21	FBT ASSY NX-4521//X4J4 [51-53]
⚠ 51	1-251-374-14	CAP ASSY, HIGH-VOLTAGE
⚠ 52	1-900-800-65	CONNECTOR ASSY, FOCUS LEAD
⚠ 53	1-900-803-22	WIRE ASSY, G2 LEAD
* 54	A-1410-927-A	GD (COM) BOARD, MOUNTED
* 55	4-076-951-01	HINGE, PWB
* 56	A-1410-925-A	CW BOARD, MOUNTED
* 57	A-1410-924-A	V BOARD, MOUNTED

SECTION 7: ELECTRICAL PARTS LIST

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components in this manual identified by the following symbol: ⋈ indicate parts that have been carefully factory-selected to satisfy regulations regarding X-ray radiation for each set.

Should replacement be required for one of these components, replace only with the value originally used.

*** Items marked with an asterisk are not stocked since they are seldom required for routine service. Expect some delay when ordering these components.**

RESISTORS

- **All resistors are in ohms**
- **F : nonflammable**
- **All variable and adjustable resistors have characteristic curve B, unless otherwise noted.**

When ordering parts by reference number, please include the board name.

A

REF. NO.	PART NO.	DESCRIPTION	VALUES
*	**A-1052-931-A**	**A BOARD, COMPLETE** (KV-29FS120LS ONLY)	
*	**A-1302-880-A**	**A BOARD, COMPLETE** (KV-27FA310/29FA310LN ONLY)	
*	**A-1302-954-A**	**A BOARD, COMPLETE** (KV-29FA310LS ONLY)	
*	**A-1302-967-A**	**A BOARD, COMPLETE** (KV-27FS120/29FS120LN ONLY)	
⚠	1-533-223-11	FUSE HOLDER	0A 0V
*	4-374-846-11	COVER, CAPACITOR, CAP TYPE	
	4-382-854-11	SCREW (M3X10), P, SW (+)	

The high-voltage leads associated with the FBT on the A board are not included and must be ordered separately. Order the following leads when requesting this A Board:

⚠	1-251-374-14	CAP ASSY, HIGH-VOLTAGE	
⚠	1-900-803-22	WIRE ASSY, G2 LEAD	
⚠	1-900-800-65	CONNECTOR ASSY, FOCUS LEAD	

CAPACITOR

C003	1-162-919-11	CERAMIC CHIP	22pF	5%	50V
C004	1-162-923-11	CERAMIC CHIP	47pF	5%	50V
C005	1-162-966-11	CERAMIC CHIP	0.0022µF	10%	50V
C006	1-126-942-61	ELECT	1000µF	20%	25V
C007	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C008	1-126-956-91	ELECT	0.1µF	20%	50V
C009	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C010	1-126-960-11	ELECT	1µF	20%	50V
C011	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C012	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C014	1-126-960-11	ELECT	1µF	20%	50V
C015	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C019	1-126-956-91	ELECT	0.1µF	20%	50V
C021	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C022	1-126-964-11	ELECT	10µF	20%	50V
C023	1-126-935-11	ELECT	470µF	20%	16V
C033	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C041	1-126-964-11	ELECT	10µF	20%	50V
C047	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C048	1-104-665-11	ELECT	100µF	20%	25V
C049	1-126-960-11	ELECT	1µF	20%	50V
C051	1-126-964-11	ELECT	10µF	20%	50V
C052	1-164-230-11	CERAMIC CHIP	220pF	5%	50V
C053	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C054	1-126-960-11	ELECT	1µF	20%	50V
C056	1-162-966-11	CERAMIC CHIP	0.0022µF	10%	50V
C057	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C064	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C074	1-126-964-11	ELECT	10µF	20%	50V
C075	1-126-935-11	ELECT	470µF	20%	16V
C076	1-104-665-11	ELECT	100µF	20%	25V
C077	1-126-947-11	ELECT	47µF	20%	35V
C079	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C080	1-128-934-91	CERAMIC CHIP	0.33µF	20%	10V
C081	1-128-934-91	CERAMIC CHIP	0.33µF	20%	10V
C090	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C091	1-126-947-11	ELECT	47µF	20%	35V
C092	1-126-947-11	ELECT	47µF	20%	35V
C094	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C095	1-126-947-11	ELECT	47µF	20%	35V
C096	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C097	1-126-947-11	ELECT	47µF	20%	35V
C098	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C099	1-126-947-11	ELECT	47µF	20%	35V
C100	1-126-956-91	ELECT	0.1µF	20%	50V
C115	1-164-739-11	CERAMIC CHIP	560pF	5%	50V
C116	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C200	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C202	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C203	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

A

REF. NO.	PART NO.	DESCRIPTION	VALUES		
C204	1-216-864-11	SHORT CHIP			
C205	1-216-864-11	SHORT CHIP			
C206	1-126-963-11	ELECT	4.7µF	20%	50V
C207	1-126-963-11	ELECT	4.7µF	20%	50V
C212	1-126-963-11	ELECT	4.7µF	20%	50V
C213	1-126-963-11	ELECT	4.7µF	20%	50V
C220	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C301	1-126-956-91	ELECT	0.1µF	20%	50V
C302	1-126-956-91	ELECT	0.1µF	20%	50V
C303	1-126-956-91	ELECT	0.1µF	20%	50V
C304	1-126-956-91	ELECT	0.1µF	20%	50V
C305	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C306	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C307	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C313	1-126-956-91	ELECT	0.1µF	20%	50V
C317	1-126-964-11	ELECT	10µF	20%	50V
C318	1-126-964-11	ELECT	10µF	20%	50V
C319	1-126-964-11	ELECT	10µF	20%	50V
C325	1-162-967-11	CERAMIC CHIP	0.0033µF	10%	50V
C326	1-164-505-11	CERAMIC CHIP	2.2µF		16V
C328	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C330	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C337	1-162-919-11	CERAMIC CHIP	22pF	5%	50V
C351	1-164-315-11	CERAMIC CHIP	470pF	5%	50V
C370	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C390	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C400	1-128-934-91	CERAMIC CHIP	0.33µF	20%	10V
C401	1-164-227-11	CERAMIC CHIP	0.022µF	10%	25V
C402	1-164-174-11	CERAMIC CHIP	0.0082µF	10%	25V
C403	1-162-967-11	CERAMIC CHIP	0.0033µF	10%	50V
C404	1-162-967-11	CERAMIC CHIP	0.0033µF	10%	50V
C405	1-164-677-11	CERAMIC CHIP	0.033µF	10%	16V
C406	1-164-677-11	CERAMIC CHIP	0.033µF	10%	16V
C407	1-162-965-11	CERAMIC CHIP	0.0015µF	10%	50V
C408	1-162-965-11	CERAMIC CHIP	0.0015µF	10%	50V
C409	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C410	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C411	1-128-934-91	CERAMIC CHIP	0.33µF	20%	10V
C412	1-126-960-11	ELECT	1µF	20%	50V
C413	1-126-963-11	ELECT	4.7µF	20%	50V
C414	1-126-961-11	ELECT	2.2µF	20%	50V
C415	1-126-963-11	ELECT	4.7µF	20%	50V
C416	1-126-960-11	ELECT	1µF	20%	50V
C418	1-126-963-11	ELECT	4.7µF	20%	50V
C419	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C420	1-126-960-11	ELECT	1µF	20%	50V
C421	1-126-965-91	ELECT	22µF	20%	50V
C422	1-126-960-11	ELECT	1µF	20%	50V
C423	1-126-963-11	ELECT	4.7µF	20%	50V
C424	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C430	1-126-963-11	ELECT	4.7µF	20%	50V
C431	1-126-963-11	ELECT	4.7µF	20%	50V
C436	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C450	1-126-943-11	ELECT	2200µF	20%	25V
C451	1-126-959-11	ELECT	0.47µF	20%	50V
C452	1-126-960-11	ELECT	1µF	20%	50V
C457	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C457	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
	(KV-27FA310/29FA310 ONLY)				
C458	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C458	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
	(KV-27FA310/29FA310 ONLY)				
C460	1-126-943-11	ELECT	2200µF	20%	25V
C461	1-126-943-11	ELECT	2200µF	20%	25V
C462	1-126-943-11	ELECT	2200µF	20%	25V
C463	1-126-943-11	ELECT	2200µF	20%	25V
C470	1-126-935-11	ELECT	470µF	20%	16V
C501	1-126-959-11	ELECT	0.47µF	20%	50V
C502	1-102-112-00	CERAMIC	330pF	10%	50V
C503	1-106-383-00	MYLAR	0.047µF	10%	200V
C504	1-102-228-00	CERAMIC	470pF	10%	500V
C505	1-102-228-00	CERAMIC	470pF	10%	500V
⚠ C506	1-117-214-11	CERAMIC	0.001µF	10%	2KV
⚠ C507	1-127-717-21	FILM	19000pF	3%	1.2KV
⚠ C508	1-129-722-00	FILM	0.047µF	5%	630V
C509	1-126-964-11	ELECT	10µF	20%	50V
⚠ C510	1-162-116-00	CERAMIC	680pF	10%	2KV
C511	1-109-844-11	FILM	0.68µF	5%	400V
C512	1-104-987-11	MYLAR	0.001µF	5%	200V
⚠ C513	1-106-383-00	MYLAR	0.047µF	10%	200V
C514	1-115-521-11	FILM	0.82µF	5%	250V
C515	1-107-649-11	ELECT	2.2µF	20%	250V
C516	1-117-412-11	FILM	0.24µF	5%	250V
C519	1-216-864-11	SHORT CHIP			
C520	1-126-965-91	ELECT	22µF	20%	50V
C521	1-126-960-11	ELECT	1µF	20%	50V

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
C522	1-102-244-00	CERAMIC	220pF	10%	500V
C523	1-165-529-11	MYLAR	0.22µF	10	275V
C525	1-164-646-11	CERAMIC	2200pF	10%	500V
C526	1-102-244-00	CERAMIC	220pF	10%	500V
C527	1-107-645-11	ELECT	22µF	20%	200V
C529	1-164-690-91	CERAMIC CHIP	0.0022µF	5%	50V
C534	1-162-966-11	CERAMIC CHIP	0.0022µF	10%	50V
C536	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C537	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
C539	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C542	1-162-966-11	CERAMIC CHIP	0.0022µF	10%	50V
C543	1-102-106-00	CERAMIC CHIP	.0001µF		50V
	(KV-27FA310/29FA310 ONLY)				
C544	1-126-967-11	ELECT	47µF	20%	50V
C545	1-126-969-11	ELECT	220µF	20%	50V
C546	1-137-194-81	FILM	0.47µF	5%	50V
C549	1-101-821-00	CERAMIC	0.0022µF		500V
C550	1-104-666-11	ELECT	220µF	20%	25V
C551	1-126-960-11	ELECT	1µF	20%	50V
C552	1-126-964-11	ELECT	10µF	20%	50V
C553	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C554	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C555	1-101-821-00	CERAMIC	0.0022µF		500V
C558	1-162-318-11	CERAMIC	0.001µF	10%	500V
C559	1-216-864-11	SHORT CHIP			
C560	1-216-833-11	METAL CHIP	10K	5%	1/10W
C561	1-126-963-11	ELECT	4.7µF	20%	50V
C562	1-104-666-11	ELECT	220µF	20%	25V
C563	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C566	1-107-635-11	ELECT	4.7µF	20%	160V
C571	1-104-665-11	ELECT	100µF	20%	25V
C581	1-136-161-00	FILM	0.047µF	5%	50V
C582	1-106-387-00	MYLAR	0.068µF	10%	200V
C585	1-104-666-11	ELECT	220µF	20%	25V
C588	1-137-417-11	MYLAR	0.015µF	10%	100V
C589	1-128-560-11	ELECT	22µF	20%	100V
C590	1-126-964-11	ELECT	10µF	20%	50V
C594	1-123-024-21	ELECT	33µF		160V
C595	1-104-666-11	ELECT	220µF	20%	25V
C597	1-104-666-11	ELECT	220µF	20%	25V
C600	1-126-964-11	ELECT	10µF	20%	50V
C601	1-117-703-11	CERAMIC	0.0047µF		250V
	(KV-29FS120LS/29FA310LS ONLY)				

REF. NO.	PART NO.	DESCRIPTION	VALUES		
⚠ C602	1-165-529-11	MYLAR	0.22µF	10	275V
⚠ C603	1-165-529-11	MYLAR	0.22µF	10	275V
⚠ C605	1-117-699-11	CERAMIC	0.001µF	20%	250V
C609	1-126-942-61	ELECT	1000µF	20%	25V
C610	1-164-645-11	CERAMIC	1000pF	10%	500V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C611	1-126-971-11	ELECT	470µF	20%	50V
C612	1-126-961-11	ELECT	2.2µF	20%	50V
C613	1-161-964-91	CERAMIC	0.0047µF		250V
C615	1-161-964-91	CERAMIC	0.0047µF		250V
C616	1-126-943-11	ELECT	2200µF	20%	25V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C617	1-107-935-11	ELECT	330µF	20%	100V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C618	1-107-935-11	ELECT	330µF	20%	100V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C620	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C621	1-117-893-11	ELECT	470µF	20%	250V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C621	1-117-894-11	ELECT	560µF	20%	250V
	(KV-27FA310/29FA310 ONLY)				
C624	1-107-636-11	ELECT	10µF	20%	160V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C625	1-126-964-11	ELECT	10µF	20%	50V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C629	1-117-893-11	ELECT	470µF	20%	250V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C629	1-117-894-11	ELECT	560µF	20%	250V
	(KV-27FA310/29FA310 ONLY)				
⚠ C631	1-113-896-11	CERAMIC	220pF	10%	250V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C632	1-126-967-11	ELECT	47µF	20%	50V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C633	1-136-479-11	FILM	0.001µF	5%	100V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C634	1-126-947-11	ELECT	47µF	20%	35V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C635	1-126-963-11	ELECT	4.7µF	20%	50V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C636	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C637	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
C638	1-104-665-11	ELECT	100µF	20%	25V

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	REF. NO.	PART NO.	DESCRIPTION	VALUES		
	C640	1-164-645-11	CERAMIC	1000pF	10%	500V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C642	1-126-969-11	ELECT	220µF	20%	50V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C643	1-130-777-00	MYLAR	0.1µF	5%	100V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C645	1-162-964-11	CERAMIC CHIP	0.001µF	10%	50V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C647	1-126-947-11	ELECT	47µF	20%	35V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C648	1-104-330-91	CERAMIC	470pF	10%	1KV
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C650	1-126-942-61	ELECT	1000µF	20%	25V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C651	1-126-942-61	ELECT	1000µF	20%	25V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C652	1-164-227-11	CERAMIC CHIP	0.022µF	10%	25V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C655	1-104-330-91	CERAMIC	470pF	10%	1KV
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C660	1-126-947-11	ELECT	47µF	20%	35V
	C661	1-104-665-11	ELECT	100µF	20%	25V
	C665	1-104-665-11	ELECT	100µF	20%	25V
	C672	1-137-756-22	FILM	22000pF	3%	800V
		(KV-27FS120/29FS120LN/29FS120LS ONLY)				
	C673	1-126-963-11	ELECT	4.7µF	20%	50V
⚠	C680	1-117-699-11	CERAMIC	0.001µF	20%	250V
	C690	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
	C901	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W

CONNECTOR

*	CN002	1-564-510-11	PLUG, CONNECTOR	7P
		(KV-27FS120/29FS120LN/29FS120LS ONLY)		
*	CN002	1-564-509-11	PLUG, CONNECTOR	6P
		(KV-27FA310/29FA310 ONLY)		
*	CN003	1-560-124-00	PLUG, CONNECTOR (2.5MM)	4P
*	CN004	1-564-510-11	PLUG, CONNECTOR	7P
*	CN401	1-564-507-11	PLUG, CONNECTOR	4P
*	CN404	1-564-507-11	PLUG, CONNECTOR	4P
		(KV-27FA310/29FA310 ONLY)		
*	CN501	1-573-963-11	PIN, CONNECTOR (PC BOARD)	3P
*	CN506	1-564-507-11	PLUG, CONNECTOR	4P
		(KV-27FS120/29FS120LN/29FS120LS ONLY)		
*	CN515	1-580-798-11	CONNECTOR PIN (DY)	6P
*	CN585	1-564-511-11	PLUG, CONNECTOR	8P
*⚠	CN600	1-580-843-11	PIN, CONNECTOR (POWER)	
*	CN601	1-580-843-11	PIN, CONNECTOR (POWER)	
		(KV-27FA310/29FA310 ONLY)		
*	CN602	1-564-509-11	PLUG, CONNECTOR	6P
		(KV-27FA310/29FA310 ONLY)		

DIODE

D002	8-719-109-89	DIODE	RD5.6ESB2
D003	8-719-110-17	DIODE	RD10ESB2
D004	8-719-110-17	DIODE	RD10ESB2
D005	8-719-110-17	DIODE	RD10ESB2
D006	8-719-921-44	DIODE	MTZJ-5.1C
D007	8-719-982-22	DIODE	MTZJ-30D
D046	8-719-109-89	DIODE	RD5.6ESB2
D047	8-719-109-89	DIODE	RD5.6ESB2
D050	8-719-510-02	DIODE	D1NS4
D051	6-500-175-01	DIODE	1E3-TB
D052	8-719-109-89	DIODE	RD5.6ESB2
D200	8-719-929-15	DIODE	HZS9.1NB2
D201	8-719-929-15	DIODE	HZS9.1NB2
D202	8-719-929-15	DIODE	HZS9.1NB2
D203	8-719-929-15	DIODE	HZS9.1NB2
D204	8-719-929-15	DIODE	HZS9.1NB2
D205	8-719-929-15	DIODE	HZS9.1NB2
D206	8-719-070-62	DIODE	PDZ9.1B-115
D207	8-719-404-50	DIODE	MA111-TX
D208	8-719-929-15	DIODE	HZS9.1NB2
D209	8-719-404-50	DIODE	MA111-TX
D230	8-719-108-12	DIODE	RD9.1EW
D231	8-719-108-12	DIODE	RD9.1EW
D232	8-719-108-12	DIODE	RD9.1EW
D234	8-719-108-12	DIODE	RD9.1EW
D235	8-719-108-12	DIODE	RD9.1EW
D236	8-719-108-12	DIODE	RD9.1EW
D237	8-719-108-12	DIODE	RD9.1EW
D317	8-719-108-12	DIODE	RD9.1EW
D321	8-719-110-17	DIODE	RD10ESB2
D351	8-719-109-66	DIODE	RD3.3ESB2
D390	8-719-404-50	DIODE	MA111-TX
D401	8-719-921-63	DIODE	MTZJ-7.5B
D405	8-719-991-33	DIODE	1SS133T-77

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REF. NO.	PART NO.	DESCRIPTION	VALUES
D412	1-216-864-11	SHORT CHIP	
D414	8-719-921-63	DIODE	MTZJ-7.5B
D430	8-719-929-15	DIODE	HZS9.1NB2
D431	8-719-929-15	DIODE	HZS9.1NB2
D500	8-719-404-50	DIODE	MA111-TX
D501	8-719-404-50	DIODE	MA111-TX
D505	8-719-081-00	DIODE	BY228/A52A/
D506	8-719-312-10	DIODE	RU4AM-T3
D507	8-719-991-33	DIODE	1SS133T-77
D508	8-719-404-50	DIODE	MA111-TX
D510	8-719-081-00	DIODE	BY228/A52A/
D513	8-719-404-50	DIODE	MA111-TX
D514	8-719-908-03	DIODE	GP08D
D515	8-719-908-03	DIODE	GP08D
D525	8-719-991-33	DIODE	1SS133T-77
D526	8-719-074-25	DIODE	PG104R
D528	8-719-991-33	DIODE	1SS133T-77
D545	8-719-908-03	DIODE	GP08D
D558	8-719-404-50	DIODE	MA111-TX
D559	8-719-404-50	DIODE	MA111-TX
D562	8-719-991-33	DIODE	1SS133T-77
⚠ D566	8-719-979-84	DIODE	EGP20DPKG23
⚠ D567	8-719-991-33	DIODE	1SS133T-77
⚠ D568	8-719-921-63	DIODE	MTZJ-7.5B
D569	8-719-921-44	DIODE	MTZJ-5.1C
D587	8-719-074-25	DIODE	PG104R
D589	8-719-991-33	DIODE	1SS133T-77
D596	8-719-979-85	DIODE	EGP20G
D598	8-719-979-85	DIODE	EGP20G
D603	8-719-064-12	DIODE	S1NB60-4062
D604	6-500-890-01	DIODE	1N5406G-EB
	(KV-27FS120/29FA310LN/29FS120LN ONLY)		
D605	8-719-510-53	DIODE	D4SB60L
	(KV-29FS120LS/29FA310LS ONLY)		
D606	6-500-890-01	DIODE	1N5406G-EB
	(KV-27FS120/29FA310LN/29FS120LN ONLY)		
D611	8-719-510-73	DIODE	S3L20UF4
	(KV-27FS120/29FS120LS/29FS120LN ONLY)		
D612	8-719-068-00	DIODE	ERC04-06SE
	(KV-27FS120/29FA310LN/29FS120LN ONLY)		
D613	8-719-068-00	DIODE	ERC04-06SE
	(KV-27FS120/29FA310LN/29FS120LN ONLY)		
D614	8-719-057-52	DIODE	EZ0150AV1
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
D615	6-500-177-01	DIODE	MA7D50
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
D618	8-719-979-64	DIODE	UF4005PKG23
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
D620	8-719-911-19	DIODE	1SS119-25
D621	8-719-510-37	DIODE	D5LC20U
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
D624	8-719-510-73	DIODE	S3L20UF4
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
D628	8-719-404-50	DIODE	MA111-TX
D629	8-719-110-31	DIODE	RD12ESB2
D631	6-500-175-01	DIODE	1E3-TB
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
D641	8-719-991-33	DIODE	1SS133T-77
D642	8-719-982-22	DIODE	MTZJ-30D
D644	8-719-110-31	DIODE	RD12ESB2
D645	8-719-109-89	DIODE	RD5.6ESB2
D650	8-719-109-89	DIODE	RD5.6ESB2

FUSE

⚠ F601	1-532-506-51	FUSE	6.3A	250V
	(KV-29FS120LS/29FA310LS ONLY)			
⚠ F601	1-576-193-11	FUSE	6.3A	125V
	(KV-27FS120/29FA310LN/29FS120LN ONLY)			

FERRITE BEAD

FB301	1-410-397-21	FERRITE	1.1µH
FB505	1-410-397-21	FERRITE	1.1µH
FB506	1-410-397-21	FERRITE	1.1µH
FB522	1-410-397-21	FERRITE	1.1µH
FB601	1-410-397-21	FERRITE	1.1µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
FB602	1-410-397-21	FERRITE	1.1µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
FB603	1-410-397-21	FERRITE	1.1µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
FB604	1-410-397-21	FERRITE	1.1µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
FB605	1-410-397-21	FERRITE	1.1µH
FB616	1-469-578-11	FERRITE	1.1µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		

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REF. NO.	PART NO.	DESCRIPTION	VALUES
FB617	1-469-578-11	FERRITE	1.1µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
	FILTER		
FL001	1-239-803-11	ENCAPSULATED COMPONENT	
	IC		
IC001	6-804-178-01	IC	M65582AUF-XXXFP
IC002	6-704-004-01	IC	BR24L16F-WE2
IC003	8-759-352-91	IC	PST9143NL
IC321	8-759-353-00	IC	NJM2534M(TE2)
IC400	6-703-190-01	IC	NJW1134AGK1-TE2
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
IC400	6-706-033-01	IC	W1172JK1-TE
	(KV-27FA310/29FA310 ONLY)		
IC404	6-705-054-01	IC	TDA8947J
IC545	8-759-696-71	IC	STV9379A
IC561	8-759-700-07	IC	NJM2903M
IC565	8-759-700-44	IC	NJM2902M
IC600	6-705-810-01	IC	MCZ3001DB
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
IC603	6-705-818-01	IC	MC7809CF
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
IC603	6-705-466-01	IC	BA90BC0T
	(KV-27FA310/29FA310 ONLY)		
IC604	8-749-012-13	IC	DM-58
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
IC608	8-759-450-47	IC	BA05T
IC633	6-703-080-01	IC	LF33CV
	JACK		
J200	1-794-119-11	TERMINAL BLOCK, S	4P
J202	1-794-118-11	JACK BLOCK, PIN	3P
* J203	1-817-461-11	PIN JACK BLOCK	5P
J205	1-794-116-11	JACK BLOCK, PIN	2P
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
J205	1-818-352-11	PIN JACK W/ DIN CONNECTOR	
	(KV-27FA310/29FA310 ONLY)		

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	CHIP CONDUCTOR				
JR2	1-216-864-11	SHORT CHIP			
JR6	1-216-864-11	SHORT CHIP			
JR7	1-216-864-11	SHORT CHIP			
JR12	1-216-864-11	SHORT CHIP			
JR44	1-216-864-11	SHORT CHIP			
JR102	1-216-864-11	SHORT CHIP			
JR128	1-216-864-11	SHORT CHIP			
JR201	1-216-864-11	SHORT CHIP			
JR207	1-216-864-11	SHORT CHIP			
JR209	1-216-864-11	SHORT CHIP			
JR211	1-216-864-11	SHORT CHIP			
JR212	1-216-864-11	SHORT CHIP			
JR213	1-216-864-11	SHORT CHIP			
JR214	1-216-864-11	SHORT CHIP			
JR215	1-216-864-11	SHORT CHIP			
JR216	1-216-864-11	SHORT CHIP			
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
JR255	1-216-864-11	SHORT CHIP			
JR301	1-216-864-11	SHORT CHIP			
JR302	1-216-864-11	SHORT CHIP			
JR303	1-216-864-11	SHORT CHIP			
JR304	1-216-864-11	SHORT CHIP			
JR305	1-216-864-11	SHORT CHIP			
JR306	1-216-864-11	SHORT CHIP			
JR310	1-216-864-11	SHORT CHIP			
JR311	1-216-864-11	SHORT CHIP			
JR312	1-216-864-11	SHORT CHIP			
JR315	1-216-864-11	SHORT CHIP			
JR317	1-216-864-11	SHORT CHIP			
JR401	1-216-864-11	SHORT CHIP			
JR411	1-216-864-11	SHORT CHIP			
JR485	1-216-864-11	SHORT CHIP			
JR486	1-216-864-11	SHORT CHIP			
JR504	1-216-864-11	SHORT CHIP			
JR585	1-216-864-11	SHORT CHIP			
JR586	1-216-864-11	SHORT CHIP			
JR1502	1-216-864-11	SHORT CHIP			
	JUMPER WIRE				
JW57	1-249-409-11	CARBON	220	5%	1/4W

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

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REF. NO.	PART NO.	DESCRIPTION	VALUES
	COIL		
L002	1-239-803-11	ENCAPSULATED COMPONENT	
L003	1-239-803-11	ENCAPSULATED COMPONENT	
L004	1-239-803-11	ENCAPSULATED COMPONENT	
L005	1-239-803-11	ENCAPSULATED COMPONENT	
L006	1-414-273-11	INDUCTOR	100µH
L007	1-414-273-11	INDUCTOR	100µH
L008	1-414-857-11	INDUCTOR	100µH
L009	1-414-857-11	INDUCTOR	100µH
L010	1-414-267-21	INDUCTOR	10µH
L011	1-239-803-11	ENCAPSULATED COMPONENT	
L101	1-414-229-11	FERRITE	0µH
L513	1-406-677-11	INDUCTOR	10MH
L515	1-412-552-11	INDUCTOR	2.2MH
L516	1-419-714-11	INDUCTOR	100µH
L525	1-409-955-31	INDUCTOR	8MH
L527	1-410-397-21	FERRITE	1.1µH
⚠ L588	1-412-523-41	INDUCTOR	6.8µH
L606	1-412-525-31	INDUCTOR	10µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
L607	1-412-525-31	INDUCTOR	10µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
L608	1-412-533-21	INDUCTOR	47µH
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
L608	1-410-397-21	INDUCTOR	1.1µH
	(KV-27FA310/29FA310 ONLY)		
L609	1-412-525-31	INDUCTOR	10µH
	PHOTO COUPLER		
⚠ PH602	8-749-010-64	PHOTO COUPLER	PC123F2
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
	IC LINK		
PS401	1-576-337-21	IC LINK	2.7A 50V
	TRANSISTOR		
Q002	8-729-422-27	TRANSISTOR	2SD601A-Q
Q004	8-729-422-27	TRANSISTOR	2SD601A-Q
Q005	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q006	8-729-422-27	TRANSISTOR	2SD601A-Q
Q008	8-729-422-27	TRANSISTOR	2SD601A-Q
Q009	8-729-422-27	TRANSISTOR	2SD601A-Q
Q300	8-729-422-27	TRANSISTOR	2SD601A-Q
Q301	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q303	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q304	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q305	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q306	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q316	8-729-422-27	TRANSISTOR	2SD601A-Q
Q390	8-729-422-27	TRANSISTOR	2SD601A-Q
Q391	8-729-422-27	TRANSISTOR	2SD601A-Q
Q400	8-729-422-27	TRANSISTOR	2SD601A-Q
Q401	8-729-422-27	TRANSISTOR	2SD601A-Q
Q404	8-729-422-27	TRANSISTOR	2SD601A-Q
Q411	8-729-422-27	TRANSISTOR	2SD601A-Q
Q412	8-729-422-27	TRANSISTOR	2SD601A-Q
Q501	8-729-423-33	TRANSISTOR	2SC3311A-QRSTA
Q502	8-729-140-50	TRANSISTOR	2SC3209LK
Q503	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q504	8-729-422-27	TRANSISTOR	2SD601A-Q
Q505	6-550-107-01	TRANSISTOR	2SD2645-YB
Q521	8-729-423-33	TRANSISTOR	2SC3311A-QRSTA
Q522	8-729-053-87	TRANSISTOR	KTC4370A
Q531	8-729-422-27	TRANSISTOR	2SD601A-Q
Q533	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q572	8-729-422-27	TRANSISTOR	2SD601A-Q
Q573	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q578	8-729-422-27	TRANSISTOR	2SD601A-Q
Q590	6-550-362-01	TRANSISTOR	KTA1279
Q600	8-729-053-36	TRANSISTOR	2SK2640-01MR-F122
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
Q601	8-729-053-36	TRANSISTOR	2SK2640-01MR-F122
	(KV-27FS120/29FS120LN/29FS120LS ONLY)		
Q604	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q608	8-729-922-37	TRANSISTOR	2SD2144S-UVW
Q650	6-550-409-01	TRANSISTOR	KSC2383-O
	RESISTOR		
R002	1-216-864-11	SHORT CHIP	
R003	1-216-821-11	METAL CHIP	1K 5% 1/10W
R004	1-216-817-11	METAL CHIP	470 5% 1/10W
R005	1-400-427-21	FERRITE	0µH
R006	1-216-829-11	METAL CHIP	4.7K 5% 1/10W

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REF. NO.	PART NO.	DESCRIPTION	VALUES			REF. NO.	PART NO.	DESCRIPTION	VALUES		
R007	1-400-427-21	FERRITE	0µH			R085	1-216-864-11	SHORT CHIP			
R015	1-216-833-11	METAL CHIP	10K	5%	1/10W	R086	1-216-821-11	METAL CHIP	1K	5%	1/10W
R027	1-218-732-11	METAL CHIP	47K	0.50%	1/10W	R087	1-247-807-31	CARBON	100	5%	1/4W
R028	1-249-409-11	CARBON	220	5%	1/4W	R088	1-216-864-11	SHORT CHIP			
R029	1-249-409-11	CARBON	220	5%	1/4W	R090	1-216-837-11	METAL CHIP	22K	5%	1/10W
R030	1-249-409-11	CARBON	220	5%	1/4W	R091	1-216-841-11	METAL CHIP	47K	5%	1/10W
R031	1-216-813-11	METAL CHIP	220	5%	1/10W	R092	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R032	1-216-813-11	METAL CHIP	220	5%	1/10W	R093	1-216-841-11	METAL CHIP	47K	5%	1/10W
R033	1-249-409-11	CARBON	220	5%	1/4W	R094	1-414-229-11	FERRITE	0µH		
R035	1-216-809-11	METAL CHIP	100	5%	1/10W	R095	1-216-813-11	METAL CHIP	220	5%	1/10W
R037	1-216-833-11	METAL CHIP	10K	5%	1/10W	R096	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R038	1-216-821-11	METAL CHIP	1K	5%	1/10W	R098	1-216-839-11	METAL CHIP	33K	5%	1/10W
R039	1-216-815-11	METAL CHIP	330	5%	1/10W	R101	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R040	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R102	1-216-837-11	METAL CHIP	22K	5%	1/10W
R041	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R103	1-216-833-11	METAL CHIP	10K	5%	1/10W
R042	1-216-813-11	METAL CHIP	220	5%	1/10W	R105	1-216-864-11	SHORT CHIP			
R043	1-216-813-11	METAL CHIP	220	5%	1/10W	R107	1-414-229-11	FERRITE	0µH		
R044	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R108	1-414-229-11	FERRITE	0µH		
R045	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R109	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R047	1-249-409-11	CARBON	220	5%	1/4W	R110	1-249-409-11	CARBON	220	5%	1/4W
R048	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R111	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R049	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R112	1-249-425-11	CARBON	4.7K	5%	1/4W
R050	1-249-425-11	CARBON	4.7K	5%	1/4W	R115	1-216-817-11	METAL CHIP	470	5%	1/10W
R051	1-249-417-11	CARBON	1K	5%	1/4W	R116	1-216-853-11	METAL CHIP	470K	5%	1/10W
R052	1-216-813-11	METAL CHIP	220	5%	1/10W	R200	1-216-813-11	METAL CHIP	220	5%	1/10W
R053	1-249-433-11	CARBON	22K	5%	1/4W	R202	1-216-845-11	METAL CHIP	100K	5%	1/10W
R054	1-249-433-11	CARBON	22K	5%	1/4W	R203	1-216-845-11	METAL CHIP	100K	5%	1/10W
R055	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R210	1-216-845-11	METAL CHIP	100K	5%	1/10W
R056	1-216-833-11	METAL CHIP	10K	5%	1/10W	R211	1-249-409-11	CARBON	220	5%	1/4W
R057	1-249-417-11	CARBON	1K	5%	1/4W	R212	1-249-409-11	CARBON	220	5%	1/4W
R058	1-249-429-11	CARBON	10K	5%	1/4W	R213	1-216-845-11	METAL CHIP	100K	5%	1/10W
R059	1-249-417-11	CARBON	1K	5%	1/4W	R215	1-216-853-11	METAL CHIP	470K	5%	1/10W
R060	1-249-409-11	CARBON	220	5%	1/4W	R216	1-216-853-11	METAL CHIP	470K	5%	1/10W
R061	1-249-429-11	CARBON	10K	5%	1/4W	R217	1-249-409-11	CARBON	220	5%	1/4W
R062	1-249-413-11	CARBON	470	5%	1/4W	R218	1-216-813-11	METAL CHIP	220	5%	1/10W
R063	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R220	1-216-813-11	METAL CHIP	220	5%	1/10W
R070	1-249-409-11	CARBON	220	5%	1/4W	R221	1-249-409-11	CARBON	220	5%	1/4W
R072	1-249-425-11	CARBON	4.7K	5%	1/4W	R222	1-249-409-11	CARBON	220	5%	1/4W
R076	1-247-807-31	CARBON	100	5%	1/4W	R227	1-218-285-11	METAL CHIP	75	5%	1/10W
R080	1-216-833-11	METAL CHIP	10K	5%	1/10W	R229	1-218-285-11	METAL CHIP	75	5%	1/10W
R081	1-216-841-11	METAL CHIP	47K	5%	1/10W	R230	1-218-285-11	METAL CHIP	75	5%	1/10W
R082	1-216-857-11	METAL CHIP	1M	5%	1/10W	R250	1-216-821-11	METAL CHIP	1K	5%	1/10W
R083	1-216-847-11	METAL CHIP	150K	5%	1/10W	R251	1-216-821-11	METAL CHIP	1K	5%	1/10W
R084	1-216-819-11	METAL CHIP	680	5%	1/10W	R303	1-216-863-11	METAL CHIP	3.3M	5%	1/10W

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
R305	1-218-285-11	METAL CHIP	75	5%	1/10W
R308	1-216-821-11	METAL CHIP	1K	5%	1/10W
R309	1-216-833-11	METAL CHIP	10K	5%	1/10W
R310	1-216-821-11	METAL CHIP	1K	5%	1/10W
R311	1-216-813-11	METAL CHIP	220	5%	1/10W
R312	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R313	1-216-864-11	SHORT CHIP			
R314	1-216-833-11	METAL CHIP	10K	5%	1/10W
R315	1-216-813-11	METAL CHIP	220	5%	1/10W
R316	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R317	1-216-813-11	METAL CHIP	220	5%	1/10W
R318	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R319	1-216-813-11	METAL CHIP	220	5%	1/10W
R320	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R321	1-247-807-31	CARBON	100	5%	1/4W
R322	1-218-684-11	METAL CHIP	470	0.50%	1/10W
R323	1-215-415-00	METAL	560	1%	1/4W
R324	1-216-821-11	METAL CHIP	1K	5%	1/10W
R325	1-216-864-11	SHORT CHIP			
R326	1-400-427-21	FERRITE	0µH		
R328	1-400-427-21	FERRITE	0µH		
R330	1-218-285-11	METAL CHIP	75	5%	1/10W
R335	1-216-813-11	METAL CHIP	220	5%	1/10W
R337	1-216-801-11	METAL CHIP	22	5%	1/10W
R338	1-216-864-11	SHORT CHIP			
R339	1-216-813-11	METAL CHIP	220	5%	1/10W
R351	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R352	1-216-853-11	METAL CHIP	470K	5%	1/10W
R363	1-218-285-11	METAL CHIP	75	5%	1/10W
R364	1-218-285-11	METAL CHIP	75	5%	1/10W
R370	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R371	1-216-849-11	METAL CHIP	220K	5%	1/10W
R372	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R382	1-216-863-11	METAL CHIP	3.3M	5%	1/10W
R390	1-216-864-11	SHORT CHIP			
R391	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R392	1-216-818-11	METAL CHIP	560	5%	1/10W
R393	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R394	1-216-833-11	METAL CHIP	10K	5%	1/10W
R400	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R401	1-216-809-11	METAL CHIP	100	5%	1/10W
R402	1-216-864-11	SHORT CHIP			
R403	1-216-809-11	METAL CHIP	100	5%	1/10W
R404	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R405	1-216-833-11	METAL CHIP	10K	5%	1/10W
R406	1-216-813-11	METAL CHIP	220	5%	1/10W
R407	1-216-813-11	METAL CHIP	220	5%	1/10W
R408	1-216-864-11	SHORT CHIP			
R409	1-216-864-11	SHORT CHIP			
R410	1-216-833-11	METAL CHIP	10K	5%	1/10W
R411	1-216-833-11	METAL CHIP	10K	5%	1/10W
R415	1-216-809-11	METAL CHIP	100	5%	1/10W
	(KV-27FA310/29FA310 ONLY)				
R418	1-216-809-11	METAL CHIP	100	5%	1/10W
	(KV-27FA310/29FA310 ONLY)				
R419	1-216-864-11	SHORT CHIP			
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R420	1-216-864-11	SHORT CHIP			
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R421	1-216-864-11	SHORT CHIP			
R422	1-216-833-11	METAL CHIP	10K	5%	1/10W
R427	1-216-841-11	METAL CHIP	47K	5%	1/10W
R429	1-216-841-11	METAL CHIP	47K	5%	1/10W
R430	1-216-845-11	METAL CHIP	100K	5%	1/10W
R431	1-216-845-11	METAL CHIP	100K	5%	1/10W
R433	1-216-809-11	METAL CHIP	100	5%	1/10W
R434	1-216-864-11	SHORT CHIP			
R442	1-216-809-11	METAL CHIP	100	5%	1/10W
R450	1-249-425-11	CARBON	4.7K	5%	1/4W
R477	1-216-819-11	METAL CHIP	680	5%	1/10W
R478	1-216-833-11	METAL CHIP	10K	5%	1/10W
R479	1-216-821-11	METAL CHIP	1K	5%	1/10W
R499	1-216-845-11	METAL CHIP	100K	5%	1/10W
R501	1-249-411-11	CARBON	330	5%	1/4W
R502	1-249-425-11	CARBON	4.7K	5%	1/4W
R503	1-215-919-11	METAL OXIDE	2.2K	5%	3W
R504	1-249-425-11	CARBON	4.7K	5%	1/4W
R507	1-216-833-11	METAL CHIP	10K	5%	1/10W
R510	1-260-328-11	CARBON	1K	5%	1/2W
R513	1-215-908-00	METAL OXIDE	33	5%	3W
R514	1-215-910-00	METAL OXIDE	68	5%	3W
R515	1-215-882-00	METAL OXIDE	22	5%	2W
R517	1-216-839-11	METAL CHIP	33K	5%	1/10W
R520	1-216-833-11	METAL CHIP	10K	5%	1/10W
R521	1-216-819-11	METAL CHIP	680	5%	1/10W
R522	1-249-411-11	CARBON	330	5%	1/4W
R524	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R525	1-215-884-11	METAL OXIDE	47	5%	2W

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

A component identified by this ⋈ symbol indicates that it has been carefully factory-selected to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
R526	1-218-724-11	METAL CHIP	22K	0.50%	1/10W
R527	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R528	1-216-816-11	METAL CHIP	390	5%	1/10W
R529	1-218-720-11	METAL CHIP	15K	0.50%	1/10W
R530	1-218-865-11	METAL CHIP	5.6K	0.50%	1/10W
R533	1-218-712-11	METAL CHIP	6.8K	0.50%	1/10W
R534	1-218-720-11	METAL CHIP	15K	0.50%	1/10W
R535	1-218-865-11	METAL CHIP	5.6K	0.50%	1/10W
R536	1-216-833-11	METAL CHIP	10K	5%	1/10W
R537	1-216-855-11	METAL CHIP	680K	5%	1/10W
R539	1-216-864-11	SHORT CHIP			
R540	1-249-429-11	CARBON	10K	5%	1/4W
R542	1-215-445-00	METAL	10K	1%	1/4W
R543	1-216-368-11	METAL OXIDE	0.82	5%	2W
R544	1-249-389-11	CARBON	4.7	5%	1/4W
R545	1-215-890-11	METAL OXIDE	470	5%	2W
R546	1-249-385-11	CARBON	2.2	5%	1/4W
R547	1-215-445-00	METAL	10K	1%	1/4W
R548	1-218-720-11	METAL CHIP	15K	0.50%	1/10W
R549	1-216-841-11	METAL CHIP	47K	5%	1/10W
R550	1-216-817-11	METAL CHIP	470	5%	1/10W
R551	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R553	1-216-821-11	METAL CHIP	1K	5%	1/10W
R554	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R555	1-216-833-11	METAL CHIP	10K	5%	1/10W
R556	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R557	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R560	1-216-821-11	METAL CHIP	1K	5%	1/10W
R561	1-216-833-11	METAL CHIP	10K	5%	1/10W
R562	1-249-429-11	CARBON	10K	5%	1/4W
R563	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
⚠⋈R564	1-218-730-11	METAL CHIP	39K	0.50%	1/10W
⚠ R565	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
⚠ R566	1-215-469-00	METAL	100K	1%	1/4W
R567	1-215-927-00	METAL OXIDE	47K	5%	3W
R568	1-215-399-00	METAL	120	1%	1/4W
R569	1-249-429-11	CARBON	10K	5%	1/4W
R570	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R572	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R573	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R574	1-216-833-11	METAL CHIP	10K	5%	1/10W
R575	1-249-389-11	CARBON	4.7	5%	1/4W
R578	1-249-429-11	CARBON	10K	5%	1/4W
R581	1-249-441-11	CARBON	100K	5%	1/4W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R583	1-249-377-11	CARBON	0.47	5%	1/4W
R584	1-215-451-00	METAL	18K	1%	1/4W
R585	1-215-447-00	METAL	12K	1%	1/4W
R586	1-218-855-11	METAL CHIP	2.2K	0.50%	1/10W
R587	1-249-401-11	CARBON	47	5%	1/4W
R588	1-215-882-00	METAL OXIDE	22	5%	2W
R589	1-247-895-91	CARBON	470K	5%	1/4W
R590	1-249-429-11	CARBON	10K	5%	1/4W
R591	1-216-363-00	METAL OXIDE	0.33	5%	2W
R592	1-249-441-11	CARBON	100K	5%	1/4W
R593	1-249-429-11	CARBON	10K	5%	1/4W
R594	1-249-418-11	CARBON	1.2K	5%	1/4W
R595	1-247-895-91	CARBON	470K	5%	1/4W
R596	1-249-377-11	CARBON	0.47	5%	1/4W
R597	1-216-849-11	METAL CHIP	220K	5%	1/10W
R598	1-249-377-11	CARBON	0.47	5%	1/4W
R601	1-240-262-11	CEMENTED	0.68	5%	10W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
R601	1-202-968-11	CEMENTED	1.2	5%	10W
	(KV-29FS120LS/29FA310LS ONLY)				
R602	1-240-262-11	CEMENTED	0.68	5%	10W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
R602	1-202-968-11	CEMENTED	1.2	5%	10W
	(KV-29FS120LS/29FA310LS ONLY)				
⚠ R603	1-219-513-11	METAL	4.7M	5%	1/2W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
R604	1-216-821-11	METAL CHIP	1K	5%	1/10W
R605	1-216-833-11	METAL CHIP	10K	5%	1/10W
R606	1-216-833-11	METAL CHIP	10K	5%	1/10W
R607	1-216-857-11	METAL CHIP	1M	5%	1/10W
R608	1-215-924-00	METAL OXIDE	15K	5%	3W
R609	1-202-962-11	CEMENTED	3.3	5%	10W
R611	1-240-262-11	CEMENTED	0.68	5%	10W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
R611	1-202-968-11	CEMENTED	1.2	5%	10W
	(KV-29FS120LS/29FA310LS ONLY)				
R612	1-260-131-11	CEMENTED	470K	5%	1/2W
	(KV-29FS120LS/29FA310LS ONLY)				
R613	1-240-262-11	CEMENTED	0.68	5%	10W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
R613	1-202-968-11	CEMENTED	1.2	5%	10W
	(KV-29FS120LS/29FA310LS ONLY)				
R614	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

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REF. NO.	PART NO.	DESCRIPTION	VALUES		
R615	1-202-933-61	FUSIBLE	0.1	10%	1/2W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R616	1-216-821-11	METAL CHIP	1K	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R617	1-216-821-11	METAL CHIP	1K	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R619	1-249-389-11	CARBON	4.7	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R620	1-216-353-00	METAL OXIDE	2.2	5%	1W
R625	1-249-413-11	CARBON	470	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R626	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R627	1-215-481-00	METAL	330K	1%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R628	1-260-131-11	CEMENTED	470K	5%	1/2W
	(KV-29FS120LS/29FA310LS ONLY)				
R629	1-215-481-00	METAL	330K	1%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R630	1-215-481-00	METAL	330K	1%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R631	1-218-718-11	METAL CHIP	12K	0.50%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R632	1-216-809-11	METAL CHIP	100	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R634	1-215-905-11	METAL OXIDE	10	5%	3W
R640	1-249-417-11	CARBON	1K	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R641	1-202-968-11	CEMENTED	1.2	5%	10W
	(KV-29FS120LS/29FA310LS ONLY)				
R641	1-240-262-11	CEMENTED	0.68	5%	10W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
R647	1-216-811-11	METAL CHIP	150	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R650	1-249-415-11	CARBON	680	5%	1/4W
R651	1-249-441-11	CARBON	100K	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R652	1-249-441-11	CARBON	100K	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R658	1-249-393-11	CARBON	10	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R659	1-249-393-11	CARBON	10	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R660	1-216-833-11	METAL CHIP	10K	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R667	1-216-833-11	METAL CHIP	10K	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R668	1-249-418-11	CARBON	1.2K	5%	1/4W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R670	1-216-833-11	METAL CHIP	10K	5%	1/10W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R671	1-243-979-71	METAL OXIDE	0.1	5%	2W
	(KV-27FS120/29FS120LN/29FS120LS ONLY)				
R680	1-216-864-11	SHORT CHIP			
R687	1-202-968-11	CEMENTED	1.2	5%	10W
	(KV-29FS120LS/29FA310LS ONLY)				
R687	1-240-262-11	CEMENTED	0.68	5%	10W
	(KV-27FS120/29FA310LN/29FS120LN ONLY)				
⚠ R699	1-218-265-11	METAL CHIP	8.2M	5%	1W
	(KV-29FS120LS/29FA310LS ONLY)				
R801	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R802	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W
R803	1-218-719-11	METAL CHIP	13K	0.50%	1/10W
R812	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R813	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R814	1-218-736-11	METAL CHIP	68K	0.50%	1/10W
R815	1-218-732-11	METAL CHIP	47K	0.50%	1/10W
R850	1-215-453-00	METAL	22K	1%	1/4W
⚠ R851	1-216-821-11	METAL CHIP	1K	5%	1/10W
R852	1-218-889-11	METAL CHIP	56K	0.50%	1/10W
R862	1-216-813-11	METAL CHIP	220	5%	1/10W
R890	1-216-843-11	METAL CHIP	68K	5%	1/10W
R893	1-216-864-11	SHORT CHIP			
R901	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W

RELAY

RY501	1-755-198-11	RELAY, AC POWER	
⚠ RY600	1-755-395-11	RELAY (AC POWER)	

SWITCH

SW515	1-572-707-11	SWITCH, LEVER	

TRANSFORMER

T505	1-433-836-11	TRANSFORMER, HORIZONTAL DRIVE	
⚠ T510	1-437-610-11	TRANSFORMER, FERRITE (PMT)	
⚠ T511	1-433-850-11	TRANSFORMER, HORIZONTAL LINEAR	

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A CW

	REF. NO.	PART NO.	DESCRIPTION	VALUES
⚠	T585	1-453-310-21	FBT ASSY NX-4521//X4J4	
⚠	T601	1-435-617-11	TRANSFORMER, LINE FILTER	
⚠	T602	1-435-675-11	TRANSFORMER, STANDBY	
			(KV-27FS120/29FA310LN/29FS120LN ONLY)	
⚠	T602	1-435-676-11	TRANSFORMER, STANDBY	
			(KV-29FS120LS/29FA310LS ONLY)	
⚠	T603	1-439-898-21	CONVERTER TRANSFORMER	
			(KV-27FS120/29FS120LN/29FS120LS ONLY)	
		THERMISTOR		
⚠	THP501	1-804-313-11	THERMISTOR, PTC	
			(KV-27FS120/29FA310LN/29FS120LN ONLY)	
⚠	THP501	1-803-540-11	THERMISTOR, PTC	
			(KV-29FS120LS/29FA310LS ONLY)	
		TUNER		
⚠	TU101	8-598-593-50	TUNER, FSS BTF-WA421	
		VARISTOR		
⚠	VDR600	1-810-974-21	VARISTOR	
			(KV-27FS120/29FA310LN/29FS120LN ONLY)	
⚠	VDR600	1-803-967-11	VARISTOR	
			(KV-29FS120LS/29FA310LS ONLY)	
		CRYSTAL		
	X001	1-795-006-21	VIBRATOR, CRYSTAL	
	X301	1-781-377-21	VIBRATOR, CRYSTAL	

CW

*	**A-1410-925-A**	**CW BOARD, MOUNTED**	
	4-382-854-11	SCREW (M3X10), P, SW (+)	
	CAPACITOR		
	C2751	1-107-652-11	ELECT 10µF 20% 250V
	C2752	1-162-114-00	CERAMIC 0.0047µF 2KV
	C2753	1-137-528-11	MYLAR 0.1µF 10% 250V
	C2754	1-102-074-00	CERAMIC 0.001µF 10% 50V
	C2755	1-107-651-11	ELECT 4.7µF 20% 250V
	C2774	1-126-960-11	ELECT 1µF 20% 50V
	C2775	1-126-935-11	ELECT 470µF 20% 16V
	C2777	1-126-963-11	ELECT 4.7µF 20% 50V
	C2778	1-126-947-11	ELECT 47µF 20% 35V
	C3701	1-126-947-11	ELECT 47µF 20% 35V
	C3702	1-136-497-81	FILM 0.1µF 5% 50V
	C3703	1-126-947-11	ELECT 47µF 20% 35V
	C3708	1-136-497-81	FILM 0.1µF 5% 50V
	C3780	1-162-926-11	CERAMIC CHIP 82pF 5% 50V
	C3781	1-162-926-11	CERAMIC CHIP 82pF 5% 50V
	C3782	1-162-926-11	CERAMIC CHIP 82pF 5% 50V
	C3901	1-107-667-11	ELECT 2.2µF 20% 400V
	C3902	1-107-364-11	MYLAR 0.01µF 10% 200V
	C3903	1-126-935-11	ELECT 470µF 20% 16V
	C3904	1-130-471-00	MYLAR 0.001µF 5% 50V
	C3905	1-107-364-11	MYLAR 0.01µF 10% 200V
	C3906	1-130-471-00	MYLAR 0.001µF 5% 50V
	C3907	1-107-638-11	ELECT 33µF 20% 160V
	C3908	1-126-935-11	ELECT 470µF 20% 16V
	C3909	1-104-999-11	MYLAR 0.1µF 5% 200V
	C3910	1-104-999-11	MYLAR 0.1µF 5% 200V
	C3911	1-104-665-11	ELECT 100µF 20% 25V
	C3912	1-126-935-11	ELECT 470µF 20% 16V
	C3913	1-126-933-11	ELECT 100µF 20% 16V
	C3914	1-130-491-00	MYLAR 0.047µF 5% 50V
	C3915	1-162-970-11	CERAMIC CHIP 0.01µF 10% 25V
	C3930	1-104-655-91	ELECT 470µF 20% 6.3V
	C3931	1-104-655-91	ELECT 470µF 20% 6.3V
	CONNECTOR		
	CN2707	1-564-506-11	PLUG, CONNECTOR 3P
*	CN2752	1-564-512-11	PLUG, CONNECTOR 9P
	CN2753	1-785-879-11	CONNECTOR, ONE TOUCH
	CN2755	1-695-915-11	TAB (CONTACT)
*	CN3903	1-564-506-11	PLUG, CONNECTOR 3P
	DIODE		
	D2701	8-719-108-12	DIODE RD9.1EW
	D2754	8-719-901-83	DIODE 1SS83
	D2755	8-719-901-83	DIODE 1SS83
	D2756	8-719-901-83	DIODE 1SS83
	D2758	8-719-074-25	DIODE PG104R
	D3762	8-719-404-50	DIODE MA111-TX
	D3763	8-719-404-50	DIODE MA111-TX
	D3772	8-719-404-50	DIODE MA111-TX

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CW

REF. NO.	PART NO.	DESCRIPTION	VALUES
D3773	8-719-404-50	DIODE	MA111-TX
D3782	8-719-404-50	DIODE	MA111-TX
D3783	8-719-404-50	DIODE	MA111-TX
D3901	8-719-110-86	DIODE	RD39ESB
D3902	8-719-110-86	DIODE	RD39ESB
D3903	8-719-991-33	DIODE	1SS133T-77
D3905	8-719-510-02	DIODE	D1NS4
D3906	8-719-404-50	DIODE	MA111-TX
D3907	8-719-404-50	DIODE	MA111-TX
D3908	8-719-404-50	DIODE	MA111-TX
	FERRITE BEAD		
FB3700	1-410-397-21	FERRITE	1.1µH
FB3701	1-410-397-21	FERRITE	1.1µH
FB3702	1-410-397-21	FERRITE	1.1µH
FB3703	1-410-397-21	FERRITE	1.1µH
	IC		
IC2751	8-759-562-43	IC	TDA6108JF/N1B
IC3701	8-759-803-42	IC	LA6500-FA
	JACK		
⚠ J2751	1-451-544-11	SOCKET, CRT	
	CHIP CONDUCTOR		
JR3910	1-216-864-11	SHORT CHIP	
	COIL		
L2751	1-408-613-31	INDUCTOR	68µH
L3710	1-410-387-11	INDUCTOR	33µH
L3711	1-410-387-11	INDUCTOR	33µH
L3712	1-410-387-11	INDUCTOR	33µH
L3901	1-412-528-11	INDUCTOR	18µH
	TRANSISTOR		
Q2772	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3710	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q3711	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3712	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3761	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3762	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3763	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3771	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3772	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3773	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3781	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3782	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3783	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3901	8-729-053-87	TRANSISTOR	KTC4370A
Q3902	6-550-247-01	TRANSISTOR	KTA1659A
Q3903	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3904	8-729-422-27	TRANSISTOR	2SD601A-Q
Q3905	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
Q3906	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q3907	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q3908	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
	RESISTOR		
R2756	1-260-328-11	CARBON	1K 5% 1/2W
R2757	1-260-328-11	CARBON	1K 5% 1/2W
R2758	1-260-328-11	CARBON	1K 5% 1/2W
R2760	1-260-087-11	CARBON	100 5% 1/2W
R2761	1-216-375-00	METAL OXIDE	3.3 5% 2W
R2762	1-216-375-00	METAL OXIDE	3.3 5% 2W
R2763	1-247-807-31	CARBON	100 5% 1/4W
R2764	1-247-807-31	CARBON	100 5% 1/4W
R2765	1-247-807-31	CARBON	100 5% 1/4W
R2766	1-247-807-31	CARBON	100 5% 1/4W
R2767	1-247-807-31	CARBON	100 5% 1/4W
R2768	1-247-807-31	CARBON	100 5% 1/4W
R2770	1-260-132-11	CARBON	560K 5% 1/2W
R2785	1-249-399-11	CARBON	33 5% 1/4W
R2788	1-249-421-11	CARBON	2.2K 5% 1/4W
R2789	1-249-425-11	CARBON	4.7K 5% 1/4W
R3700	1-249-433-11	CARBON	22K 5% 1/4W
R3701	1-216-833-11	METAL CHIP	10K 5% 1/10W
R3702	1-216-813-11	METAL CHIP	220 5% 1/10W
R3704	1-249-419-11	CARBON	1.5K 5% 1/4W
R3705	1-216-833-11	METAL CHIP	10K 5% 1/10W
R3706	1-249-381-11	CARBON	1 5% 1/4W
R3707	1-249-383-11	CARBON	1.5 5% 1/4W
R3710	1-216-821-11	METAL CHIP	1K 5% 1/10W
R3711	1-218-692-11	METAL CHIP	1K 0.50% 1/10W

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CW D

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R3712	1-218-690-11	METAL CHIP	820	0.50%	1/10W
R3713	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
R3714	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3719	1-215-888-00	METAL OXIDE	220	5%	2W
R3760	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3762	1-218-692-11	METAL CHIP	1K	0.50%	1/10W
R3763	1-216-835-11	METAL CHIP	15K	5%	1/10W
R3764	1-218-678-11	METAL CHIP	270	0.50%	1/10W
R3765	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
R3766	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3767	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R3768	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3769	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3770	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3771	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3772	1-218-692-11	METAL CHIP	1K	0.50%	1/10W
R3773	1-216-835-11	METAL CHIP	15K	5%	1/10W
R3774	1-218-678-11	METAL CHIP	270	0.50%	1/10W
R3775	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
R3776	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3777	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R3778	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3779	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3780	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3782	1-218-692-11	METAL CHIP	1K	0.50%	1/10W
R3783	1-216-835-11	METAL CHIP	15K	5%	1/10W
R3784	1-218-678-11	METAL CHIP	270	0.50%	1/10W
R3785	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
R3786	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3787	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R3788	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3901	1-249-405-11	CARBON	100	5%	1/4W
R3902	1-249-385-11	CARBON	2.2	5%	1/4W
R3903	1-249-414-11	CARBON	560	5%	1/4W
R3904	1-249-432-11	CARBON	18K	5%	1/4W
R3905	1-249-421-11	CARBON	2.2K	5%	1/4W
R3906	1-249-432-11	CARBON	18K	5%	1/4W
R3907	1-249-385-11	CARBON	2.2	5%	1/4W
R3908	1-249-414-11	CARBON	560	5%	1/4W
R3909	1-260-316-51	CARBON	100	5%	1/2W
R3910	1-215-915-11	METAL OXIDE	470	5%	3W
R3911	1-216-812-11	METAL CHIP	180	5%	1/10W
R3912	1-216-811-11	METAL CHIP	150	5%	1/10W
R3913	1-216-806-11	METAL CHIP	56	5%	1/10W
R3914	1-216-820-11	METAL CHIP	820	5%	1/10W
R3915	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3916	1-216-864-11	SHORT CHIP			
R3917	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3918	1-216-805-11	METAL CHIP	47	5%	1/10W
R3919	1-216-805-11	METAL CHIP	47	5%	1/10W
R3921	1-216-833-11	METAL CHIP	10K	5%	1/10W
R3922	1-249-397-11	CARBON	22	5%	1/4W
R3923	1-249-401-11	CARBON	47	5%	1/4W
R3930	1-216-864-11	SHORT CHIP			
R3931	1-249-421-11	CARBON	2.2K	5%	1/4W
R3932	1-218-696-11	METAL CHIP	1.5K	0.50%	1/10W
R3933	1-216-864-11	SHORT CHIP			
R3935	1-249-405-11	CARBON	100	5%	1/4W
R3938	1-216-864-11	SHORT CHIP			

VARIABLE RESISTOR

RV2701	1-238-019-11	RES, ADJ, CARBON 47K	
⚠ RV2750	1-241-656-11	RES, ADJ, METAL FILM 110M	

D

* **A-1415-635-A D BOARD, MOUNTED**
(ALL EXCEPT KV-27FA310/29FA310)

⚠	1-900-807-96	WIRE ASSY, G2 LEAD 180

CAPACITOR

C1815	1-129-718-00	FILM	0.022µF	5%	630V
C1816	1-102-244-00	CERAMIC	220pF	10%	500V
C1817	1-129-709-91	FILM	0.0039µF	5%	630V
C1818	1-164-645-11	CERAMIC	1000pF	10%	500V
C1819	1-102-244-00	CERAMIC	220pF	10%	500V
C1820	1-109-954-11	ELECT	0.47µF	20%	160V

DIODE

D1809	8-719-110-41	DIODE	RD15ESB2
D1810	8-719-970-87	DIODE	ERA38-06
D1811	8-719-970-87	DIODE	ERA38-06
D1812	8-719-081-93	DIODE	1N4937/23

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

D GD

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	COIL				
L1805	1-406-677-11	INDUCTOR	10MH		
	TRANSISTOR				
Q1810	8-729-043-95	TRANSISTOR	2SC3840(3)		
	RESISTOR				
R1845	1-249-441-11	CARBON	100K	5%	1/4W
R1846	1-249-441-11	CARBON	100K	5%	1/4W
R1847	1-249-441-11	CARBON	100K	5%	1/4W
R1848	1-215-894-11	METAL OXIDE	2.2K	5%	2W
R1849	1-215-923-00	METAL OXIDE	10K	5%	3W
R1850	1-215-923-00	METAL OXIDE	10K	5%	3W
R1851	1-215-922-11	METAL OXIDE	6.8K	5%	3W
R1852	1-215-922-11	METAL OXIDE	6.8K	5%	3W
	TRANSFORMER				
T1801	1-433-533-12	TRANSFORMER, FERRITE (DFT)			

GD

*	**A-1410-927-A**	**GD (COM) BOARD, MOUNTED**	
	(KV-27FA310/29FA310 ONLY)		
⚠	1-900-807-96	WIRE ASSY, G2 LEAD 180	
	4-382-854-11	SCREW (M3X10), P, SW (+)	
	CAPACITOR		
C1602	1-137-150-11	FILM	0.01µF 5% 100V
C1604	1-164-625-11	CERAMIC	680pF 10% 500V
C1609	1-164-625-11	CERAMIC	680pF 10% 500V
C1616	1-126-943-11	ELECT	2200µF 20% 25V
C1617	1-123-024-21	ELECT	33µF 160V
C1620	1-137-150-11	FILM	0.01µF 5% 100V
C1624	1-107-636-11	ELECT	10µF 20% 160V
C1633	1-136-479-11	FILM	0.001µF 5% 100V
C1634	1-126-964-11	ELECT	10µF 20% 50V
C1635	1-126-963-11	ELECT	4.7µF 20% 50V
C1637	1-136-165-00	FILM	0.1µF 5% 50V
C1642	1-126-969-11	ELECT	220µF 20% 50V
C1643	1-136-165-00	FILM	0.1µF 5% 50V
C1645	1-136-479-11	FILM	0.001µF 5% 100V
C1647	1-126-947-11	ELECT	47µF 20% 35V
C1648	1-164-143-11	CERAMIC	0.001µF 10% 1KV
C1649	1-164-143-11	CERAMIC	0.001µF 10% 1KV
C1650	1-100-120-51	ELECT	1000µF 20% 35V
C1652	1-137-374-11	MYLAR	0.047µF 5% 50V
C1669	1-164-625-11	CERAMIC	680pF 10% 500V
C1670	1-164-625-11	CERAMIC	680pF 10% 500V
C1672	1-165-953-11	FILM	47000pF 3% 800V
C1680	1-117-228-71	MYLAR	2.2µF 10% 450V
C1815	1-129-718-00	FILM	0.022µF 5% 630V
C1816	1-102-244-00	CERAMIC	220pF 10% 500V
C1817	1-129-709-91	FILM	0.0039µF 5% 630V
C1818	1-164-645-11	CERAMIC	1000pF 10% 500V
C1819	1-102-244-00	CERAMIC	220pF 10% 500V
C1820	1-109-954-11	ELECT	0.47µF 20% 160V
	CONNECTOR		
* CN1600	1-580-843-11	PIN, CONNECTOR (POWER)	
	DIODE		
D1611	8-719-062-40	DIODE	D4SBL20µF3
D1614	8-719-057-52	DIODE	EZ0150AV1
D1615	8-719-062-40	DIODE	D4SBL20µF3
D1618	8-719-979-64	DIODE	µF4005PKG23
D1621	6-500-181-01	DIODE	MA6D50
D1631	6-500-175-01	DIODE	1E3-TB
D1809	8-719-110-41	DIODE	RD15ESB2
D1810	8-719-970-87	DIODE	ERA38-06
D1811	8-719-970-87	DIODE	ERA38-06
D1812	8-719-081-93	DIODE	1N4937/23
	FERRITE BEAD		
FB1602	1-410-397-21	FERRITE	1.1µH
FB1604	1-410-397-21	FERRITE	1.1µH
FB1609	1-410-397-21	FERRITE	1.1µH
FB1616	1-410-397-21	FERRITE	1.1µH
FB1617	1-410-397-21	FERRITE	1.1µH

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

GD HR

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	IC				
IC1600	6-705-810-01	IC	MCZ3001DB		
IC1601	8-749-012-13	IC	DM-58		
	COIL				
L1600	1-406-977-21	INDUCTOR	100µH		
L1604	1-412-525-31	INDUCTOR	10µH		
L1608	1-412-529-81	INDUCTOR	22µH		
L1805	1-406-677-11	INDUCTOR	10MH		
	PHOTO COUPLER				
PH1602	8-749-924-35	PHOTO COUPLER	ON3171-R		
	IC LINK				
PS1401	1-576-337-21	IC LINK	2.7A	50V	
	TRANSISTOR				
Q1600	8-729-052-32	TRANSISTOR	IRFIB7N50A-LF31		
Q1601	8-729-052-32	TRANSISTOR	IRFIB7N50A-LF31		
Q1810	8-729-043-95	TRANSISTOR	2SC3840(3)		
	RESISTOR				
⚠ R1615	1-202-933-61	FUSIBLE	0.1	10%	1/2W
R1616	1-249-418-11	CARBON	1.2K	5%	1/4W
R1617	1-249-417-11	CARBON	1K	5%	1/4W
R1619	1-249-377-11	CARBON	0.47	5%	1/4W
R1620	1-215-857-71	METAL OXIDE	10	5%	1W
R1625	1-249-413-11	CARBON	470	5%	1/4W
R1626	1-215-443-00	METAL	8.2K	1%	1/4W
R1629	1-245-478-21	METAL	470K	1%	1/4W
R1630	1-245-478-21	METAL	470K	1%	1/4W
R1631	1-215-449-00	METAL	15K	1%	1/4W
R1632	1-215-397-00	METAL	100	1%	1/4W
R1640	1-249-417-11	CARBON	1K	5%	1/4W
R1647	1-215-396-00	METAL	91	1%	1/4W
R1650	1-249-441-11	CARBON	100K	5%	1/4W
R1651	1-249-441-11	CARBON	100K	5%	1/4W
R1658	1-249-393-11	CARBON	10	5%	1/4W
R1659	1-249-393-11	CARBON	10	5%	1/4W
R1660	1-249-429-11	CARBON	10K	5%	1/4W
R1667	1-249-429-11	CARBON	10K	5%	1/4W
R1668	1-249-418-11	CARBON	1.2K	5%	1/4W
R1670	1-249-429-11	CARBON	10K	5%	1/4W
R1671	1-243-979-71	METAL OXIDE	0.1	5%	2W
R1672	1-243-979-71	METAL OXIDE	0.1	5%	2W
R1845	1-249-441-11	CARBON	100K	5%	1/4W
R1846	1-249-441-11	CARBON	100K	5%	1/4W
R1847	1-249-441-11	CARBON	100K	5%	1/4W
R1848	1-215-894-11	METAL OXIDE	2.2K	5%	2W
R1849	1-215-923-00	METAL OXIDE	10K	5%	3W
R1850	1-215-923-00	METAL OXIDE	10K	5%	3W
R1851	1-215-922-11	METAL OXIDE	6.8K	5%	3W
R1852	1-215-922-11	METAL OXIDE	6.8K	5%	3W
	TRANSFORMER				
⚠ T1604	1-437-606-12	COVERTER TRANSFORMER			
T1801	1-433-533-12	TRANSFORMER, FERRITE (DFT)			

HR

* **A-1415-629-A HR (VAR) BOARD, MOUNTED**
(KV-27FA310/29FA310 ONLY)

	CAPACITOR				
C3001	1-104-665-11	ELECT	100µF	20%	25V
	CONNECTOR				
* CN3001	1-564-521-11	PLUG, CONNECTOR	6P		
	DIODE				
D3001	8-719-109-89	DIODE	RD5.6ESB2		
D3002	8-719-057-09	DIODE	LNJ801LPDJA		
	IC				
IC3001	8-742-211-20	HYB IC	SBX3071-71		

HR HS HU

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	RESISTOR				
R3001	1-249-417-11	CARBON	1K	5%	1/4W
R3014	1-247-807-31	CARBON	100	5%	1/4W
	SWITCH				
S3006	1-786-338-12	SWITCH, TACTILE			

HS

* **A-1415-674-A HS BOARD, MOUNTED**
(ALL EXCEPT KV-27FA310/29FA310)

	CAPACITOR				
C1001	1-104-665-11	ELECT	100µF	20%	25V
C1234	1-126-960-11	ELECT	1µF	20%	50V
C1235	1-126-960-11	ELECT	1µF	20%	50V
	DIODE				
D1001	8-719-929-15	DIODE	HZS9.1NB2		
D1002	8-719-070-80	DIODE	LNK0120022G		
D1003	8-719-929-15	DIODE	HZS9.1NB2		
D1004	8-719-109-89	DIODE	RD5.6ESB2		
D1005	8-719-109-89	DIODE	RD5.6ESB2		
D1233	8-719-108-12	DIODE	RD9.1EW		
D1235	8-719-108-12	DIODE	RD9.1EW		
D1236	8-719-108-12	DIODE	RD9.1EW		
	IC				
IC1001	8-742-212-20	HYB IC	SBX3081-71		
	JACK				
J1231	1-794-048-11	JACK, PIN 3P			
	RESISTOR				
R1004	1-249-417-11	CARBON	1K	5%	1/4W
R1007	1-247-807-31	CARBON	100	5%	1/4W
R1008	1-249-427-11	CARBON	6.8K	5%	1/4W
R1009	1-249-421-11	CARBON	2.2K	5%	1/4W
R1010	1-249-416-11	CARBON	820	5%	1/4W
R1011	1-249-415-11	CARBON	680	5%	1/4W
R1201	1-249-419-11	CARBON	1.5K	5%	1/4W
R1202	1-249-421-11	CARBON	2.2K	5%	1/4W
R1203	1-249-427-11	CARBON	6.8K	5%	1/4W
R1234	1-247-804-11	CARBON	75	5%	1/4W
R1235	1-249-409-11	CARBON	220	5%	1/4W
R1236	1-249-441-11	CARBON	100K	5%	1/4W
R1237	1-249-409-11	CARBON	220	5%	1/4W
R1238	1-249-441-11	CARBON	100K	5%	1/4W
	SWITCH				
S1001	1-692-431-21	SWITCH, TACTILE			
S1002	1-692-431-21	SWITCH, TACTILE			
S1003	1-692-431-21	SWITCH, TACTILE			
S1004	1-692-431-21	SWITCH, TACTILE			
S1005	1-692-431-21	SWITCH, TACTILE			
S1006	1-692-431-21	SWITCH, TACTILE			
S1007	1-762-816-11	SWITCH, TACTILE			
S1008	1-762-816-11	SWITCH, TACTILE			

HU

* **A-1415-631-A HU (VAR) BOARD, MOUNTED**
(KV-27FA310/29FA310 ONLY)

	CAPACITOR				
C2234	1-137-194-81	FILM	0.47µF	5%	50V
C2235	1-137-194-81	FILM	0.47µF	5%	50V
	DIODE				
D301	8-719-108-12	DIODE	RD9.1EW		
D2235	8-719-108-12	DIODE	RD9.1EW		
D2236	8-719-108-12	DIODE	RD9.1EW		
D2240	8-719-110-17	DIODE	RD10ESB2		
D2241	8-719-110-17	DIODE	RD10ESB2		
	JACK				
J2231	1-794-048-11	JACK, PIN 3P			

HU K

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	RESISTOR				
R1001	1-249-427-11	CARBON	6.8K	5%	1/4W
R1002	1-249-421-11	CARBON	2.2K	5%	1/4W
R1003	1-249-419-11	CARBON	1.5K	5%	1/4W
R2008	1-249-427-11	CARBON	6.8K	5%	1/4W
R2009	1-249-421-11	CARBON	2.2K	5%	1/4W
R2010	1-249-416-11	CARBON	820	5%	1/4W
R2011	1-249-415-11	CARBON	680	5%	1/4W
R2235	1-249-409-11	CARBON	220	5%	1/4W
R2236	1-249-441-11	CARBON	100K	5%	1/4W
R2237	1-249-409-11	CARBON	220	5%	1/4W
R2238	1-249-441-11	CARBON	100K	5%	1/4W
R2240	1-247-804-11	CARBON	75	5%	1/4W
	SWITCH				
S1007	1-762-816-11	SWITCH, TACTILE			
S1008	1-762-816-11	SWITCH, TACTILE			
S2001	1-692-431-21	SWITCH, TACTILE			
S2002	1-692-431-21	SWITCH, TACTILE			
S2003	1-692-431-21	SWITCH, TACTILE			
S2004	1-692-431-21	SWITCH, TACTILE			
S2005	1-692-431-21	SWITCH, TACTILE			

K

* **A-1410-921-A K BOARD, MOUNTED**
(KV-27FA310/29FA310 ONLY)

4-382-854-11 SCREW (M3X10), P, SW (+)

CAPACITOR

C2401	1-130-495-00	MYLAR	0.1µF	5%	50V
C2402	1-130-495-00	MYLAR	0.1µF	5%	50V
C2403	1-126-964-11	ELECT	10µF	20%	50V
C2404	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2405	1-126-965-91	ELECT	22µF	20%	50V
C2406	1-126-964-11	ELECT	10µF	20%	50V
C2407	1-126-964-11	ELECT	10µF	20%	50V
C2408	1-162-969-11	CERAMIC CHIP	0.0068µF	10%	25V
C2410	1-126-969-11	ELECT	220µF	20%	50V
C2411	1-126-965-91	ELECT	22µF	20%	50V
C2412	1-137-194-81	FILM	0.47µF	5%	50V
C2413	1-100-120-51	ELECT	1000µF	20%	35V
C2414	1-126-963-11	ELECT	4.7µF	20%	50V
C2415	1-126-967-11	ELECT	47µF	20%	50V
C2416	1-164-172-11	CERAMIC CHIP	0.0056µF	10%	25V
C2417	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2418	1-125-891-11	CERAMIC CHIP	0.47µF	10%	10V
C2419	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C2420	1-126-959-11	ELECT	0.47µF	20%	50V
C2421	1-126-959-11	ELECT	0.47µF	20%	50V
C2422	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C2423	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C2424	1-162-969-11	CERAMIC CHIP	0.0068µF	10%	25V
C2425	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2426	1-162-927-11	CERAMIC CHIP	100pF	5%	50V
C2427	1-126-947-11	ELECT	47µF	20%	35V
C2428	1-126-943-11	ELECT	2200µF	20%	25V
C2429	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2430	1-126-960-11	ELECT	1µF	20%	50V
C2431	1-126-963-11	ELECT	4.7µF	20%	50V
C2432	1-126-963-11	ELECT	4.7µF	20%	50V
C2433	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C2434	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2435	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2436	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2437	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2438	1-164-227-11	CERAMIC CHIP	0.022µF	10%	25V
C2439	1-164-227-11	CERAMIC CHIP	0.022µF	10%	25V
C2440	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2441	1-115-412-11	CERAMIC CHIP	680pF	5%	25V
C2442	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C2443	1-115-412-11	CERAMIC CHIP	680pF	5%	25V
C2444	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C2445	1-126-965-91	ELECT	22µF	20%	50V
C2446	1-130-495-00	MYLAR	0.1µF	5%	50V
C2447	1-130-495-00	MYLAR	0.1µF	5%	50V
C2448	1-137-190-91	FILM	0.22µF	5%	50V
C2449	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C2450	1-126-963-11	ELECT	4.7µF	20%	50V
C2451	1-162-967-11	CERAMIC CHIP	0.0033µF	10%	50V
C2452	1-164-677-11	CERAMIC CHIP	0.033µF	10%	16V
C2453	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2454	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2455	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2456	1-126-963-11	ELECT	4.7µF	20%	50V
C2457	1-126-963-11	ELECT	4.7µF	20%	50V

K

REF. NO.	PART NO.	DESCRIPTION	VALUES		
C2458	1-126-963-11	ELECT	4.7µF	20%	50V
C2459	1-126-965-91	ELECT	22µF	20%	50V
C2460	1-137-194-81	FILM	0.47µF	5%	50V
C2461	1-126-963-11	ELECT	4.7µF	20%	50V
C2462	1-126-963-11	ELECT	4.7µF	20%	50V
C2463	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2464	1-126-960-11	ELECT	1µF	20%	50V
C2465	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2466	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2467	1-164-677-11	CERAMIC CHIP	0.033µF	10%	16V
C2468	1-162-967-11	CERAMIC CHIP	0.0033µF	10%	50V
C2469	1-130-495-00	MYLAR	0.1µF	5%	50V
C2470	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2471	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2472	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C2473	1-126-964-11	ELECT	10µF	20%	50V
C2474	1-126-964-11	ELECT	10µF	20%	50V
C2475	1-126-968-11	ELECT	100µF	20%	50V
C2476	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C2477	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2478	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2479	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2480	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2481	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2482	1-107-826-11	CERAMIC CHIP	0.1µF	10%	16V
C2484	1-130-495-00	MYLAR	0.1µF	5%	50V
C2485	1-130-495-00	MYLAR	0.1µF	5%	50V
C2486	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C2487	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C2488	1-162-968-11	CERAMIC CHIP	0.0047µF	10%	50V
C2489	1-127-715-91	CERAMIC CHIP	0.22µF	10%	16V
C2490	1-104-665-11	ELECT	100µF	20%	25V
C2493	1-126-935-11	ELECT	470µF	20%	16V
C2494	1-126-935-11	ELECT	470µF	20%	16V
C2495	1-126-935-11	ELECT	470µF	20%	16V
C2496	1-126-935-11	ELECT	470µF	20%	16V
C2499	1-164-315-11	CERAMIC CHIP	470pF	5%	50V

CONNECTOR

* CN2401	1-564-510-11	PLUG, CONNECTOR	7P		
* CN2402	1-564-508-11	PLUG, CONNECTOR	5P		

REF. NO.	PART NO.	DESCRIPTION	VALUES		

DIODE

D2400	8-719-404-50	DIODE	MA111-TX		
D2401	8-719-070-60	DIODE	PDZ7.5B-115		

IC

IC2401	6-705-054-01	IC	TDA8947J		
IC2402	8-759-100-96	IC	UPC4558G2		
IC2403	6-706-034-01	IC	NJW1164M-TE2		
IC2404	8-759-165-01	IC	NJM2177AFG1		
IC2405	8-759-686-15	IC	NJM2180M (TE2)		

CHIP CONDUCTOR

JR2401	1-216-864-11	SHORT CHIP			
JR2402	1-216-864-11	SHORT CHIP			
JR2410	1-216-864-11	SHORT CHIP			
JR2411	1-216-864-11	SHORT CHIP			
JR2420	1-216-864-11	SHORT CHIP			
JR2421	1-216-864-11	SHORT CHIP			

IC LINK

PS2401	1-576-337-21	IC LINK	2.7A	50V	

TRANSISTOR

Q2400	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q2401	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q2410	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2411	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2412	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2413	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2414	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q2418	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q2419	8-729-120-28	TRANSISTOR	2SC1623-L5L6		

RESISTOR

R2401	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2402	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2403	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R2404	1-216-835-11	METAL CHIP	15K	5%	1/10W
R2405	1-218-895-11	METAL CHIP	100K	0.50%	1/10W
R2406	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W
R2407	1-216-835-11	METAL CHIP	15K	5%	1/10W

K

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R2408	1-218-868-11	METAL CHIP	7.5K	0.50%	1/10W
R2409	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2410	1-216-835-11	METAL CHIP	15K	5%	1/10W
R2411	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2412	1-218-868-11	METAL CHIP	7.5K	0.50%	1/10W
R2413	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2414	1-216-835-11	METAL CHIP	15K	5%	1/10W
R2415	1-220-397-11	METAL CHIP	4.7M	5%	1/10W
R2416	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2417	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2418	1-216-809-11	METAL CHIP	100	5%	1/10W
R2419	1-216-809-11	METAL CHIP	100	5%	1/10W
R2420	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2421	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2422	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2423	1-216-840-11	METAL CHIP	39K	5%	1/10W
R2424	1-216-840-11	METAL CHIP	39K	5%	1/10W
R2425	1-216-840-11	METAL CHIP	39K	5%	1/10W
R2426	1-216-817-11	METAL CHIP	470	5%	1/10W
R2427	1-216-817-11	METAL CHIP	470	5%	1/10W
R2428	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R2429	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R2430	1-216-809-11	METAL CHIP	100	5%	1/10W
R2431	1-216-809-11	METAL CHIP	100	5%	1/10W
R2432	1-216-864-11	SHORT CHIP			
R2433	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2434	1-218-895-11	METAL CHIP	100K	0.50%	1/10W
R2435	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2436	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2437	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2438	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2439	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2440	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2441	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2442	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2443	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2446	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2447	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2448	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2449	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2450	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2451	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2452	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2453	1-216-841-11	METAL CHIP	47K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R2454	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2455	1-216-809-11	METAL CHIP	100	5%	1/10W
R2456	1-216-809-11	METAL CHIP	100	5%	1/10W
R2457	1-216-864-11	SHORT CHIP			
R2458	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R2459	1-216-853-11	METAL CHIP	470K	5%	1/10W
R2460	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W
R2461	1-216-839-11	METAL CHIP	33K	5%	1/10W
R2462	1-218-296-11	METAL CHIP	75K	5%	1/10W
R2463	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R2464	1-218-331-11	METAL CHIP	51K	5%	1/10W
R2465	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
R2466	1-218-866-11	METAL CHIP	6.2K	0.50%	1/10W
R2467	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2468	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2469	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2470	1-216-840-11	METAL CHIP	39K	5%	1/10W
R2471	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
R2472	1-218-331-11	METAL CHIP	51K	5%	1/10W
R2473	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R2474	1-216-839-11	METAL CHIP	33K	5%	1/10W
R2475	1-218-296-11	METAL CHIP	75K	5%	1/10W
R2476	1-216-835-11	METAL CHIP	15K	5%	1/10W
R2477	1-216-835-11	METAL CHIP	15K	5%	1/10W
R2478	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2479	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2480	1-218-331-11	METAL CHIP	51K	5%	1/10W
R2481	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R2482	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2483	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2484	1-216-828-11	METAL CHIP	3.9K	5%	1/10W
R2485	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2486	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2487	1-218-717-11	METAL CHIP	11K	0.50%	1/10W
R2488	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2489	1-216-835-11	METAL CHIP	15K	5%	1/10W
R2490	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2491	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2492	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2493	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2494	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2495	1-218-292-11	METAL CHIP	20K	5%	1/10W
R2496	1-216-847-11	METAL CHIP	150K	5%	1/10W
R2497	1-216-823-11	METAL CHIP	1.5K	5%	1/10W

K V

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R2498	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2499	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2500	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R2501	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2502	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2503	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2504	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2505	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2507	1-216-809-11	METAL CHIP	100	5%	1/10W
R2519	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2520	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2521	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2522	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2523	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2524	1-216-864-11	SHORT CHIP			

V

* **A-1410-924-A V BOARD, MOUNTED**

CAPACITOR

C2801	1-128-578-11	ELECT	1µF	20%	100V
C2802	1-126-964-11	ELECT	10µF	20%	50V
C2803	1-137-378-11	MYLAR	0.22µF	5%	50V
C2804	1-137-378-11	MYLAR	0.22µF	5%	50V
C2805	1-129-745-61	FILM	0.033µF	5%	400V
C2808	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C2809	1-128-934-91	CERAMIC CHIP	0.33µF	20%	10V
C2810	1-130-495-00	MYLAR	0.1µF	5%	50V
C2811	1-129-725-00	FILM	0.082µF	5%	400V
C2812	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C2813	1-126-933-11	ELECT	100µF	20%	16V
C2821	1-162-970-11	CERAMIC CHIP	0.01µF	10%	25V
C2823	1-130-967-00	FILM	0.0027µF	5%	50V
C2824	1-165-176-11	CERAMIC CHIP	0.047µF	10%	16V
C2826	1-162-927-11	CERAMIC CHIP	100pF	5%	50V
C2862	1-126-964-11	ELECT	10µF	20%	50V

CONNECTOR

* CN2901	1-564-507-11	PLUG, CONNECTOR	4P	
* CN2902	1-770-723-11	CONNECTOR, BOARD TO BOARD	8P	
* CN2903	1-564-506-11	PLUG, CONNECTOR	3P	

REF. NO.	PART NO.	DESCRIPTION	VALUES		
	DIODE				
D2801	8-719-109-89	DIODE	RD5.6ESB2		
D2802	8-719-991-33	DIODE	1SS133T-77		
D2804	8-719-302-43	DIODE	EL1Z		
D2805	8-719-991-33	DIODE	1SS133T-77		
D2806	8-719-991-33	DIODE	1SS133T-77		
D2807	8-719-210-21	DIODE	11EQS04		
D2808	8-719-991-33	DIODE	1SS133T-77		
D2813	8-719-991-33	DIODE	1SS133T-77		
	IC				
IC2801	6-701-598-01	IC	UPC5023CS-184		
	COIL				
L2801	1-406-989-21	INDUCTOR	10MH		
L2802	1-419-633-11	INDUCTOR	10MH		
L2803	1-412-529-11	INDUCTOR	22µH		
	TRANSISTOR				
Q2801	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q2802	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2803	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2804	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q2805	6-550-106-01	TRANSISTOR	KTB764		
Q2807	8-729-931-45	TRANSISTOR	IRF614		
Q2808	6-550-106-01	TRANSISTOR	KTB764		
Q2812	8-729-026-39	TRANSISTOR	2SA933AS-QT		
	RESISTOR				
R2800	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2801	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2802	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2803	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2804	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2805	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R2807	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R2808	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2809	1-216-837-11	METAL CHIP	22K	5%	1/10W
R2811	1-249-393-11	CARBON	10	5%	1/4W

V

REF. NO.	PART NO.	DESCRIPTION	VALUES		
R2815	1-215-862-11	METAL OXIDE	68	5%	1W
R2817	1-218-736-11	METAL CHIP	68K	0.50%	1/10W
R2818	1-216-809-11	METAL CHIP	100	5%	1/10W
R2819	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2820	1-218-883-11	METAL CHIP	33K	0.50%	1/10W
R2821	1-218-714-11	METAL CHIP	8.2K	0.50%	1/10W
R2824	1-218-740-11	METAL CHIP	100K	0.50%	1/10W
R2825	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2826	1-249-421-11	CARBON	2.2K	5%	1/4W
R2827	1-218-708-11	METAL CHIP	4.7K	0.50%	1/10W
R2828	1-218-728-11	METAL CHIP	33K	0.50%	1/10W
R2829	1-216-853-11	METAL CHIP	470K	5%	1/10W
R2833	1-218-710-11	METAL CHIP	5.6K	0.50%	1/10W
R2834	1-218-704-11	METAL CHIP	3.3K	0.50%	1/10W
R2837	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R2840	1-218-702-11	METAL CHIP	2.7K	0.50%	1/10W
R2841	1-218-706-11	METAL CHIP	3.9K	0.50%	1/10W
R2842	1-218-700-11	METAL CHIP	2.2K	0.50%	1/10W
R2855	1-218-706-11	METAL CHIP	3.9K	0.50%	1/10W
R2856	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R2857	1-218-875-11	METAL CHIP	15K	0.50%	1/10W
R2860	1-218-716-11	METAL CHIP	10K	0.50%	1/10W
R2864	1-218-668-11	METAL CHIP	100	0.50%	1/10W
R2866	1-249-438-11	CARBON	56K	5%	1/4W
R2870	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2876	1-216-821-11	METAL CHIP	1K	5%	1/10W
R2890	1-218-728-11	METAL CHIP	33K	0.50%	1/10W
R2893	1-216-839-11	METAL CHIP	33K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION	VALUES
		ACCESSORIES AND PACKING	
*	4-041-259-05	BAG, PROTECTION	
*	2-190-595-01	CARTON, INDIVIDUAL (KV-27FA310 ONLY)	
*	4-102-073-01	CARTON, INDIVIDUAL (KV-/29FA310 ONLY)	
*	4-103-469-01	CARTON, INDIVIDUAL (KV-27FS120 ONLY)	
*	4-103-471-01	CARTON, INDIVIDUAL (KV-29FS120 ONLY)	
*	4-088-874-01	CUSHION, LOWER (KV-27FS120/29FS120 ONLY)	
*	4-102-075-01	CUSHION, LOWER (KV-27FA310/29FA310 ONLY)	
*	4-088-875-01	CUSHION, UPPER (KV-27FS120/29FS120 ONLY)	
*	4-102-074-01	CUSHION, UPPER (KV-27FA310/29FA310 ONLY)	
*	4-093-139-11	INSERT, DOOR BREAKAGE (L) (KV-27FA310 ONLY)	
	4-101-451-41	MANUAL, INSTRUCTION (KV-27FA310/29FA310 ONLY)	
	4-101-456-21	MANUAL, INSTRUCTION (KV-27FS120/27FA310 ONLY)	
	4-101-456-31	MANUAL, INSTRUCTION (KV-27FS120/27FA310 CANADA ONLY)	
	4-101-456-41	MANUAL, INSTRUCTION (KV-29FS120LN/29FS120LS ONLY)	
		REMOTE COMMANDER	
	1-476-680-21	REMOTE COMMANDER (RM-Y180) (KV-27FA310/29FA310 ONLY)	
	1-478-707-11	REMOTE COMMANDER (RM-Y195) (KV-27FS120/29FS120LN/29FS120LS ONLY)	
	4-978-977-11	BATTERY COVER (FOR RM-Y180/Y195)	

Sony Corporation
Sony Technology Center
Technical Services
Service Promotion Department

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9-965-960-02

SERVICE MANUAL BA-6 CHASSIS

In an effort to reduce the size of this pdf file the tiled schematics are not attached to this Service Manual. To receive a complete set of the tiled schematics for this manual please submit a request to Nita Wardlaw at nita.wardlaw@am.sony.com.

SONY

4-101-456-**21(2)**

FD Trinitron

WEGA®

Operating Instructions

KV-27FS120

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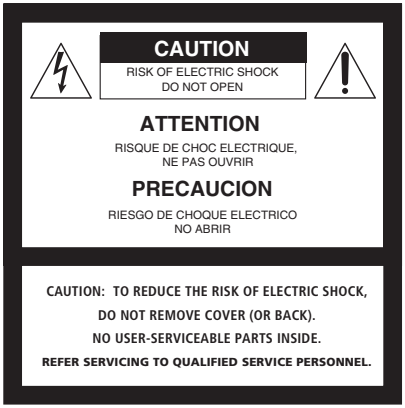
WARNING

To reduce the risk of fire or electric shock, do not expose the TV to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Note to the CATV Installer

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

SAFETY PRECAUTIONS

- ❏ Operate the TV only on 120 V AC.
- ❏ One blade of the power plug is wider than the other for safety purposes and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- ❏ If any liquid or solid object falls into the TV, unplug it and have it checked by qualified personnel before operating it further.

CAUTION

When using TV games, computers, and similar products with your TV, keep the brightness and contrast functions at low settings. If a fixed (non-moving) pattern is left on the screen for long periods of time at a high brightness or contrast setting, the image can be permanently imprinted onto the screen. Continuously watching the same channel can cause the imprint of station logos onto the TV screen. These types of imprints are not covered by your warranty because they are the results of misuse.

To reduce the risk of electric shock, do not use this polarized plug with an extension cord, receptacle, or other outlet unless the blades can be fully inserted to prevent blade exposure.

✍ You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

NOTIFICATION

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ❏ Reorient or relocate the receiving antennas.
- ❏ Increase the separation between the equipment and receiver.
- ❏ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ❏ Consult the dealer or an experienced radio/TV technician for help.

Protecting the TV

- ❏ To prevent internal heat build-up, do not block the ventilation openings.
- ❏ Do not install the TV in a hot or humid place, or in a place subject to excessive dust or mechanical vibration.

Note on Caption Vision

This television receiver provides display of television closed captioning in accordance with § 15.119 of the FCC rules. Use of this television for other than private viewing of programs broadcast on UHF or VHF or transmitted by cable companies for the use of the general public may require authorization from the broadcaster-cable company and/or program owner.

Owner's Record

The model and serial numbers are located on the front cover of this manual and at the rear of your TV.

Trademarks and Copyrights

ENERGY STAR is a registered mark.

As an ENERGY STAR® Partner, Sony has determined that this product or product model meets the ENERGY STAR® guidelines for energy efficiency.

SRS and the (●)® symbol are trademarks of SRS Labs, Inc.

Manufactured under license from BBE Sound, Inc. Licensed by BBE Sound, Inc. under USP 4638258, 5510752 and 5736897. BBE and BBE symbol are registered trademarks of BBE Sound, Inc.

WEGA, FD Trinitron, ClearEdge VM, Steady Sound and Caption Vision are registered trademarks of Sony Corporation.

IMPORTANT SAFEGUARDS

For your protection, please read these instructions completely, and keep this manual for future reference. Carefully observe and comply with all warnings, cautions and instructions placed on the set, or described in the operating instructions or service manual.

WARNING

To guard against injury, the following basic safety precautions should be observed in the installation, use, and servicing of the set.

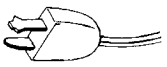
Use

Power Sources

This set should be operated only from the type of power source indicated on the serial/model plate. If you are not sure of the type of electrical power supplied to your home, consult your dealer or local power company. For those sets designed to operate from battery power, refer to the operating instructions.

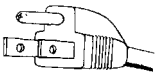
Grounding or Polarization

This set may be equipped with a polarized alternating current line plug (a plug having one blade wider than other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.



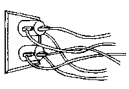
For the set with a three-wire grounding type AC plug

This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to have a suitable outlet installed. Do not defeat the safety purpose of the grounding plug.



Overloading

Do not overload wall outlets, extension cords or convenience receptacles beyond their capacity, since this can result in fire or electric shock.



Always turn the set off when it is not to be used. When the set is left unattended and unused for long periods of time, unplug it from the wall outlet as a precaution against the possibility of an internal malfunction that could create a fire hazard.

Do not disconnect the antenna or the power cord during a heavy storm. Lightning may strike while you are holding the cable or cord, causing serious injury. Turn off your TV and wait for the weather to improve.

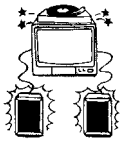
Object and Liquid Entry

Never push objects of any kind into the set through the cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the set.

Attachments

Do not use attachments not recommended by the manufacturer, as they may cause hazards.

Do not place any objects, especially heavy objects, on top of the set. The object may fall from the set, causing injury.



Cleaning

Unplug the set from the wall outlet before cleaning or polishing it. Do not use liquid cleaners or aerosol cleaners. Use a cloth lightly dampened with water for cleaning the exterior of the set.

If a snapping or popping sound from a TV set is continuous or frequent while the TV is operating, unplug the TV and consult your dealer or service technician. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off.

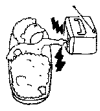
Installation

Always use two or more people to lift or move the set. The set is heavy and the bottom surface is flat. Serious injury can result from trying to move the set by yourself alone, or from unsteady handling.

Install the set on a stable, level surface.

Water and Moisture

Do not use power-line operated sets near water — for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.



Accessories

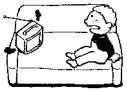
Do not place the set on an unstable cart, stand, tripod, bracket, table, or shelf. The set may fall, causing serious injury to a child or an adult, and serious damage to the set. Use only a cart or stand recommended by the manufacturer for the specific model of TV. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

Ventilation

The slots and openings in the cabinet and in the back or bottom are provided for necessary ventilation. To ensure reliable operation of the set, and to protect it from overheating, these slots and openings must never be blocked or covered.

- **Never cover the slots and openings with a cloth or other materials.**

- **Never block the slots and openings by placing the set on a bed, sofa, rug or other similar surface.**



- **Never place the set in a confined space, such as a bookcase or built-in cabinet, unless proper ventilation is provided.**

- **Do not place the set near or over a radiator or heat register, or where it is exposed to direct sunlight.**

Power-Cord Protection

Do not allow anything to rest on or roll over the power cord, and do not place the set where the power cord is subject to wear or abuse.

Antennas

Outdoor Antenna Grounding

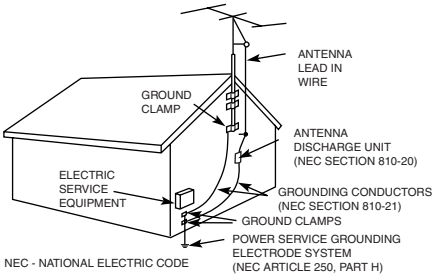
If an outdoor antenna is installed, follow the precautions below. An outdoor antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can come in contact with such power lines or circuits.

WHEN INSTALLING AN OUTDOOR ANTENNA SYSTEM, EXTREME CARE SHOULD BE TAKEN TO KEEP FROM CONTACTING SUCH POWER LINES OR CIRCUITS AS CONTACT WITH THEM IS ALMOST INVARIABLY FATAL.

Be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code (NEC) in USA and Section 54 of the Canadian Electrical Code in Canada provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

Antenna Grounding According to the NEC

Antenna Grounding According to the National Electrical Code, ANSI/NFPA 70.


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ARTICLE 250, PART H)
NEC - NATIONAL ELECTRIC CODE

Lightning

For added protection for this television receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage to the receiver due to lightning and power-line surges.

Service

Damage Requiring Service

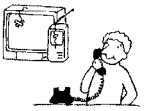
Unplug the set from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- **When the power cord or plug is damaged or frayed.**

- **If liquid has been spilled into the set or objects have fallen into the product.**

- **If the set has been exposed to rain or water.**

- **If the set has been subject to excessive shock by being dropped, or the cabinet has been damaged.**



- **If the set does not operate normally when following the operating instructions. Adjust only those controls that are specified in the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the set to normal operation.**

- **When the set exhibits a distinct change in performance — this indicates a need for service.**

Servicing

Do not attempt to service the set yourself since opening the cabinet may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Replacement Parts

When replacement parts are required, be sure the service technician certifies in writing that he has used replacement parts specified by the manufacturer that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety Check

Upon completion of any service or repairs to the set, ask the service technician to perform routine safety checks (as specified by the manufacturer) to determine that the set is in safe operating condition, and to so certify. When the set reaches the end of its useful life, improper disposal could result in a picture tube implosion. Ask a qualified service technician to dispose of the set.

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Introduction

Congratulations on your purchase of the Sony FD Trinitron WEGA®.

Introducing the FD Trinitron WEGA® Features

Some of the features you will enjoy include:

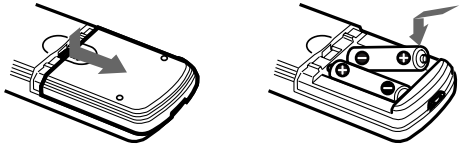
- **FD Trinitron Flat CRT** — Delivers a picture with uncompromising accuracy and outstanding image detail via a technologically advanced tube.
- **Y, P_B, P_R Inputs** — Provides component video inputs for superior picture quality (480i only).
- **BBE** — Gives sound more impact by using audio technology to compensate for phase effects in speakers.
- **SRS** — Produces a dynamic three-dimensional sound for stereo programs.
- **ClearEdge VM** — Sharpens picture definition to give objects a crisp, clean edge.
- **Favorite Channels** — Provides instant access to your favorite channels with the touch of a button.
- **Info Banner** — Displays the name and the remaining time of the current program viewed, if available.
- **Universal Remote Control** — Operates your connected cable box, VCR, digital satellite receiver, DVD player, or DVD/VCR combination unit.
- **Energy Star®** — Meets the Energy Star guidelines for energy efficiency.
- **Parental Control (V-Chip)** — Helps parents monitor what their children watch on TV by establishing rating limits.
- **Front Panel Controls** — Allows access to the on-screen menus without the use of a remote control.
- **Front A/V Inputs** — Lets you quickly connect video games, camcorders or stereo/mono equipment.
- **16:9 Enhanced** — Provides enhanced picture resolution for wide-screen sources such as DVD.

About this Manual

This manual provides instructions to help you enjoy your new TV. It shows you how to connect to an antenna or cable, cable box, VCR, DVD, satellite receiver, stereo system, or camcorder. Once your TV is connected, follow the instructions and use the remote control to access the on-screen menus.

Batteries for the Remote Control

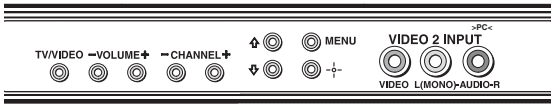
Insert two AA (R6) batteries (supplied) into the remote control using the following illustration as a guide.



✍ Under normal conditions, batteries will last up to six months. If the remote control does not operate properly, the batteries might be worn out.

✍ If you will not be using the remote control for an extended period of time, remove the batteries to avoid possible damage from battery leakage.

Front Panel Menu Controls



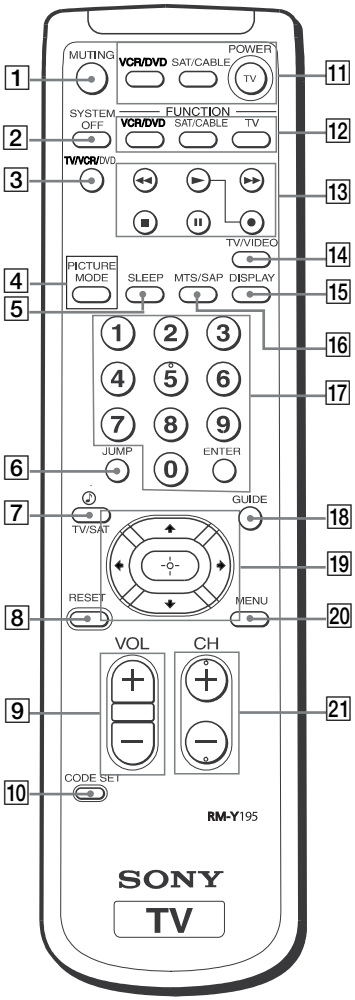
The front Audio/Video panel controls allow you to access the menu without the remote control.

- Press MENU to display the on-screen menu.
- Use the ⊕ and ⊖ buttons on the front Audio/Video panel instead of your remote control.
- Use the ⊕ button on the front Audio/Video panel to navigate through the menus, then select an item. The front panel controls also allow you to change your channels (CH+/-), adjust the volume (VOL +/-), and change video inputs.

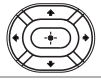
✍ To navigate the menus with your remote control, see "Using the Menus" on page 27.

Using the Remote Control

Remote Control Description



	Button	Description
1	**MUTING**	Press to turn off the sound. Press again or press VOL + to restore sound.
2	**SYSTEM OFF**	Press to turn off the equipment programmed into the remote control. See "Programming the Remote Control" on page 5. This button does not work with DVD/VCR combo units, and may not work with older Sony equipment.
3	**TV/VCR/DVD**	Press to change the VHF/UHF output of the VCR (or DVD/VCR combination unit). If you have a non-Sony VCR or DVD, you will need to program the remote control to recognize your VCR or DVD. For details, see "Programming the Remote Control" on page 5.
4	**PICTURE MODE**	Press repeatedly to step through the available video picture modes: Vivid, Standard, Movie and Pro. Also available in the Video menu. See "Using the Video Menu" on page 28 for details.
5	**SLEEP**	Press repeatedly until the TV displays the time in minutes (15, 30, 45, 60, or 90) that you want the TV to remain on before shutting off automatically. Cancel by pressing until Sleep Off appears.
6	**JUMP**	Press to jump back and forth between two channels. The TV alternates between the current channel and the last channel that you selected. JUMP will not work if any FUNCTION Mode (VCR/DVD, SAT/CABLE, TV) is activated.
7	**TV/SAT**	Press to switch between the TV and SAT (satellite) inputs when in SAT FUNCTION mode.
	♪	Press for a direct selection of Effect settings (Simulated, SRS, Off) when the remote is in TV FUNCTION mode. See "Using the Audio Menu" on page 29 for details.
8	**RESET**	Press to return to factory settings while in an on-screen menu.
9	**VOL (volume)**	Press (+) or (-) to adjust the volume.
10	**CODE SET**	Press to program your remote control to operate connected video equipment. See "Programming the Remote Control" on page 5.

	Button	Description
11	**POWER buttons**	Press to turn on and off the TV and other audio/video equipment you have programmed into the remote control. For instructions, see "Programming the Remote Control" on page 5.
12	**FUNCTION buttons**	Press to select the equipment (VCR/DVD, SAT/CABLE, TV) that you want to operate with the remote control. The indicator (LED) lights up momentarily when pressed to show which device the remote control is operating.
13	**VCR (operating)**	Press to operate your VCR. The VCR must be programmed into the remote control. For instructions, see "Programming the Remote Control" on page 5.
14	**TV/VIDEO**	Press to cycle through available video inputs.
15	**DISPLAY**	Press once to display the current time (if set) and the program status such as channel number, Channel Label (if set), video input, and Video Label (if set). Press again to turn off the display.
16	**MTS/SAP**	Press to cycle through the Multi-channel TV Sound (MTS) options: Stereo, Auto SAP (Second Audio Programming), and Mono.
17	**0–9 and ENTER**	Press to change channels. The channel changes after two seconds.
18	**GUIDE**	Press to display the program guide of your satellite receiver.
19		Press the arrow buttons to move the cursor in the on-screen menus. Press the center button to select an option.
20	**MENU**	Press to display the on-screen menu. Press again to exit the menu at any time.
21	**CH (channel)**	Press to change channels. To scan rapidly through the channels, press and hold down the CH+ or CH- button.

✍ If you lose your remote control, see page 42.

Programming the Remote Control

If you have video equipment other than Sony brand (or if you have a Sony DVD/VCR combination unit) that you want to control with the TV's remote control, use the following procedure to program the remote control.

1 Check the list of "Manufacturer's Codes" on page 6 and find the three-digit code number for the manufacturer of your component. If more than one code number is listed, use the number listed first.

2 Press CODE SET.

✍ The VCR/DVD and SAT/CABLE FUNCTION button will flash when you press CODE SET.

3 Press VCR/DVD or SAT/CABLE FUNCTION button to indicate the type of component you want to program with the remote control.

✍ You must do step 4 within 10 seconds of step 3, or you must redo steps 2 and 3.

4 Use the 0-9 buttons to enter the three-digit manufacturer's code number.

5 Press ENTER.

6 To check if the code number works, aim the TV's remote control at the component and press on the green POWER button (VCR/DVD, SAT/CABLE, TV) that corresponds with that component. If it responds, you are done. If not try using another code listed for that manufacturer.

✍ If you have problems programming your remote control, see "Troubleshooting" on page 42.

Manufacturer's Codes

VCRs

Manufacturer	Code
Sony	301, 302, 303
Admiral (M. Ward)	327
Aiwa	338, 344
Audio Dynamic	314, 337
Broksonic	319, 317
Canon	309, 308
Citizen	332
Craig	302, 332
Criterion	315
Curtis Mathes	304, 338, 309
Daewoo	341, 312, 309
DBX	314, 336, 337
Dimensia	304
Emerson	319, 320, 316, 317, 318, 341
Fisher	330, 335
Funai	338
General Electric	329, 304, 309
Go Video	322, 339, 340
Goldstar	332
Hitachi	306, 304, 305, 338
Instant Replay	309, 308
JC Penney	309, 305, 304, 330, 314, 336, 337
JVC	314, 336, 337, 345, 346, 347
Kenwood	314, 336, 332, 337
LXI (Sears)	332, 305, 330, 335, 338
Magnavox	308, 309, 310
Marantz	314, 336, 337
Marta	332
Memorex	309, 335
Minolta	305, 304
Mitsubishi/ MGA	323, 324, 325, 326
Multitech	325, 338, 321
NEC	314, 336, 337
Olympic	309, 308
Optimus	327
Panasonic	308, 309, 306, 307
Pentax	305, 304
Philco	308, 309
Philips	308, 309, 310
Pioneer	308
Quasar	308, 309, 306
RCA/ PROSCAN	304, 305, 308, 309, 311, 312, 313, 310, 329
Realistic	309, 330, 328, 335, 324, 338
Sansui	314
Samsung	322, 313, 321
Sanyo	330, 335
Scott	312, 313, 321, 335, 323, 324, 325, 326
Sharp	327, 328
Shintom	315
Signature 2000 (M. Ward)	338, 327
SV2000	338
Sylvania	308, 309, 338, 310
Symphonic	338
Tashiro	332
Tatung	314, 336, 337
Teac	314, 336, 338, 337
Technics	309, 308
Toshiba	312, 311
Wards	327, 328, 335, 331, 332
Yamaha	314, 330, 336, 337
Zenith	331

Laserdisc Players

Manufacturer	Code
Sony	701
Panasonic	704, 710
Pioneer	702

DVD/VCR Combination Units

Manufacturer	Code
Sony	601
Broksonic	605
JVC	604
Panasonic	609
Samsung	603
Toshiba	602

DVD Players

Manufacturer	Code
Sony	751
Hitachi	758
JVC	756
Magnavox	757
Mitsubishi	761
Onkyo	762
Oritron	759
Panasonic	753
Philips	757
Pioneer	752
RCA	755
Samsung	758
Toshiba	754
Zenith	760

Cable Boxes

Manufacturer	Code
Sony	230
Hamlin/Regal	222, 223, 224, 225, 226
Jerrold/G.I./ Motorola	201, 202, 203, 204, 205, 206, 207, 208, 218
Oak	227, 228, 229
Panasonic	219, 220, 221
Pioneer	211, 214, 215
Scientific Altanta	209, 210, 211
Tocom	216, 217
Zenith	212, 213

Satellite Receivers

Manufacturer	Code
Sony	801
DIRECT TV	809
Dish Network	810
Echostar	810
General Electric	802
Hitachi	805
Hughes	804
Mitsubishi	809
Panasonic	803
RCA/ PROSCAN	802, 808
Toshiba	806, 807

Using your TV Remote Control with Other Equipment

Operating a VCR

Press	To
VCR/DVD	Activate the remote control to operate the VCR (FUNCTION button)
VCR/DVD	Power on/off the VCR (VCR/DVD green button)
CH + CH − or 0-9, ENTER (using tuner)	Change channels
►	Play video tape
■	Stop
◄◄ or ►►	Rewind or Fast-forward a video tape
II	Pause
● and ► (Simultaneously)	Record
TV/VIDEO	Switch between VCR and TV inputs

Operating a DVD Player

Press	To
VCR/DVD	Activate the remote control to operate the DVD (FUNCTION button)
VCR/DVD	Power on/off the DVD (VCR/DVD green button)
0-9, ENTER	Select chapters
CH + CH −	Search chapters forward or backward
►	Play DVD
■	Stop
II	Pause
◄◄ or ►►	Search the picture forward or backward during playback
MENU	Display the DVD menu
	Use the arrow buttons to move the cursor in the menu, and the center button to select an option
TV/VIDEO	Switch between DVD and TV inputs

Operating a Cable Box or Satellite Receiver

Press	To
SAT/CABLE	Activate the remote control to operate the cable box or satellite receiver (FUNCTION button)
SAT/CABLE	Power on/off the cable box or satellite receiver (SAT/CABLE green button)
CH + CH − or 0-9, ENTER (using tuner)	Change channels
JUMP	Change back to previous channel
DISPLAY	Display channel number (satellite receiver)

Operating a Cable Box or Satellite Receiver

Press	To
GUIDE	Display SAT Guide (satellite receiver)
MENU	Display SAT Menu (satellite receiver)
	Use the arrow buttons to move the cursor in the menu, and the center button to select an option (satellite receiver)
TV/SAT	Press to switch between the TV and SAT inputs (satellite receiver)

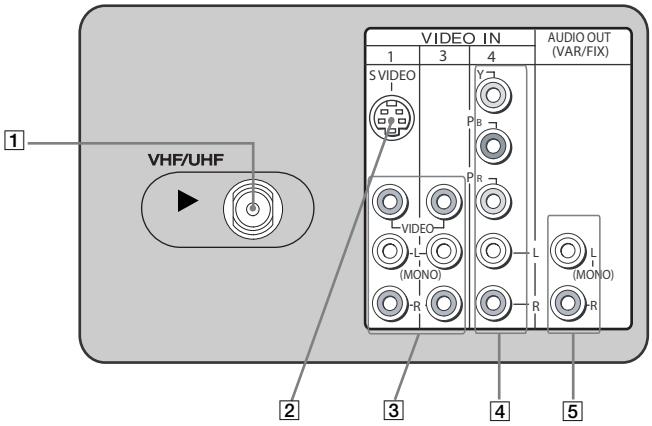
Operating a DVD/VCR Combination Unit

Press	To
VCR/DVD	Activate the remote control to operate the DVD/VCR (FUNCTION button)
VCR/DVD	Power on/off the DVD/VCR combination unit (VCR/DVD green button)
TV/VCR/DVD	When the VCR is not playing, TV/VCR/DVD switches between the DVD player and VCR's tuner
MENU	Display the DVD Menu
►	Play
■	Stop
❚❚	Pause
◄◄ or ►►	Rewind or fast-forward a video tape (VCR) Search the picture forward or backward during playback (DVD)
	Use the arrow buttons to move the cursor in the menu, and the center button to select an option (DVD)
► and ● (Simultaneously)	Record (VCR)
CH + CH − or 0-9,ENTER (using tuner)	Change channels (VCR)

Connecting Your TV

Read this section before setting up your TV for the first time. This section explains how to make the basic connections and how to connect optional equipment.

TV Rear Panel



Jack	Description
1 **VHF/UHF**	This input connects to your VHF/UHF antenna or cable.
2 **S VIDEO**	This input connects to the S VIDEO OUT jack on your VCR or other video equipment that has S VIDEO. S VIDEO provides better picture quality than the VHF/UHF jacks or the video input jack. S VIDEO does not provide sound, so you still must connect the audio cables.
3 **VIDEO/AUDIO L(MONO), R**	This input connects to the AUDIO/VIDEO output jacks on your VCR or other video equipment. A third video input jack (VIDEO 2) is located on the front panel of the TV. These AUDIO/VIDEO input jacks provide better picture quality than the VHF/UHF jack.

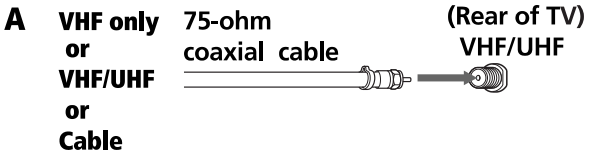
4 **Y, P_B, P_R/ L, R**	This input connects to the component video Y, P_B, P_R, and AUDIO L, R jacks on your DVD player or digital set-top box (480i only).
5 **AUDIO OUT (VAR/FIX) L(MONO), R**	This jack connects to the Audio input jacks on your audio equipment. You can listen to your TV's audio through your stereo system.

Basic Connections

TV with Cable, Indoor, or Outdoor Antenna

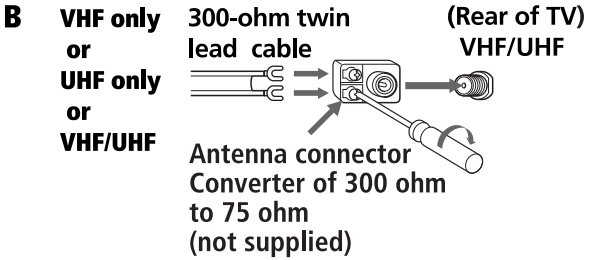
Depending on the cable system available in your home, choose one of the connections below:

A



Use this to connect the TV to a cable system or an antenna with a 75-ohm cable (usually built into newer homes).

B

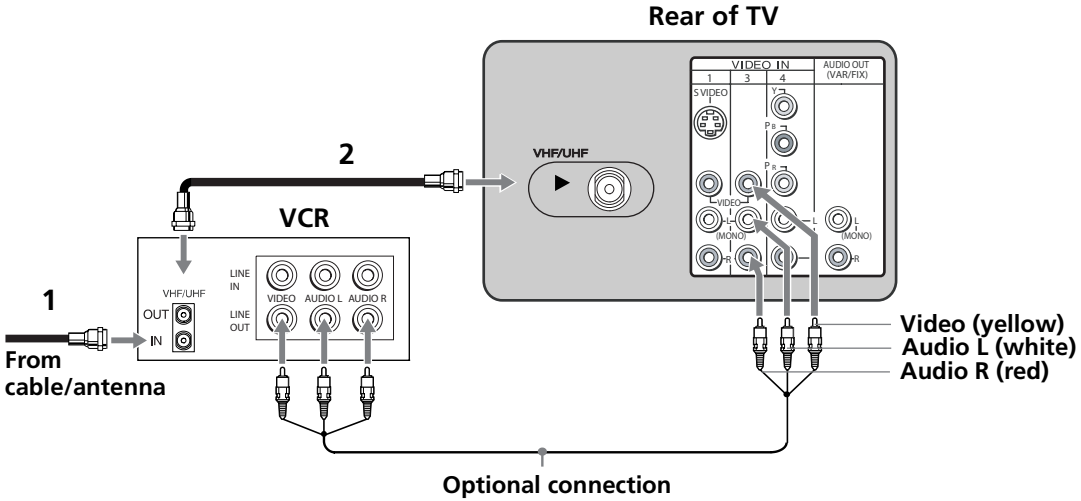


Use this to connect the TV to a dipole antenna, also known as a "rabbit ears" antenna (usually found in older homes).

✍ If you are connecting to an indoor or outdoor antenna, you may need to adjust the orientation of the antenna for the best reception.

Connecting Additional Equipment

Connecting a TV and VCR



1 Connect the coaxial cable from your TV antenna or cable service to the IN jack on your VCR.

2 Connect a coaxial cable (not supplied) from the OUT jack on your VCR to the VHF/UHF jack on the TV.

Optional connection

- ❏ If your VCR is equipped with video outputs, you can get better picture quality by connecting audio/video cables (not supplied) from AUDIO/VIDEO OUT on your VCR to AUDIO/VIDEO IN on your TV.
- ❏ For better picture quality, use S VIDEO instead of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.

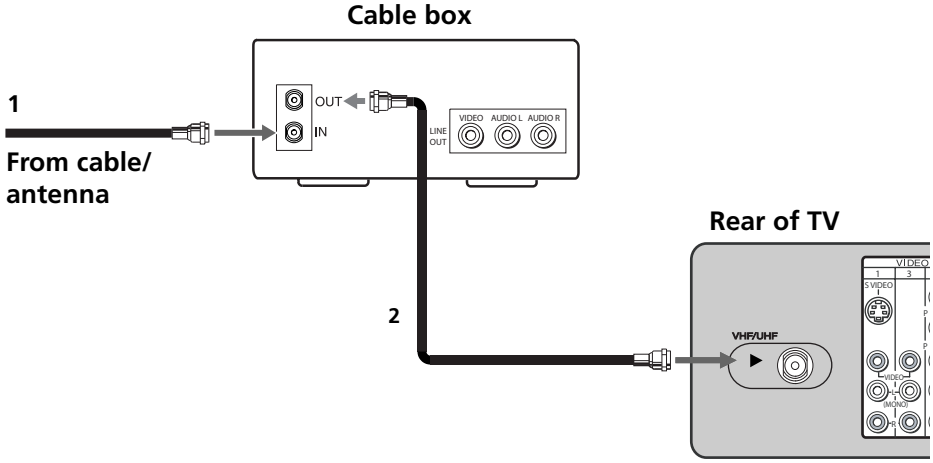
Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your VCR (see page 5).
- ❏ To activate your remote, press VCR/DVD (FUNCTION button) to operate your VCR. To do this, first program your remote control, then use the Channel Fix feature to set your TV to channel 3 or 4 (see page 31).
- ❏ Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input) and VHF/UHF (local channels).

TV and Cable Box

Some cable TV systems use scrambled or encoded signals that require a cable box to view all channels. If you subscribe to such type of service, use this connection.



1 Connect the coaxial cable from your cable service to the IN jack on your cable box.

2 Connect a coaxial cable (not supplied) from the OUT jack on your cable box to the VHF/UHF jack on your TV.

Using your TV with this connection

This connection allows you to do the following:

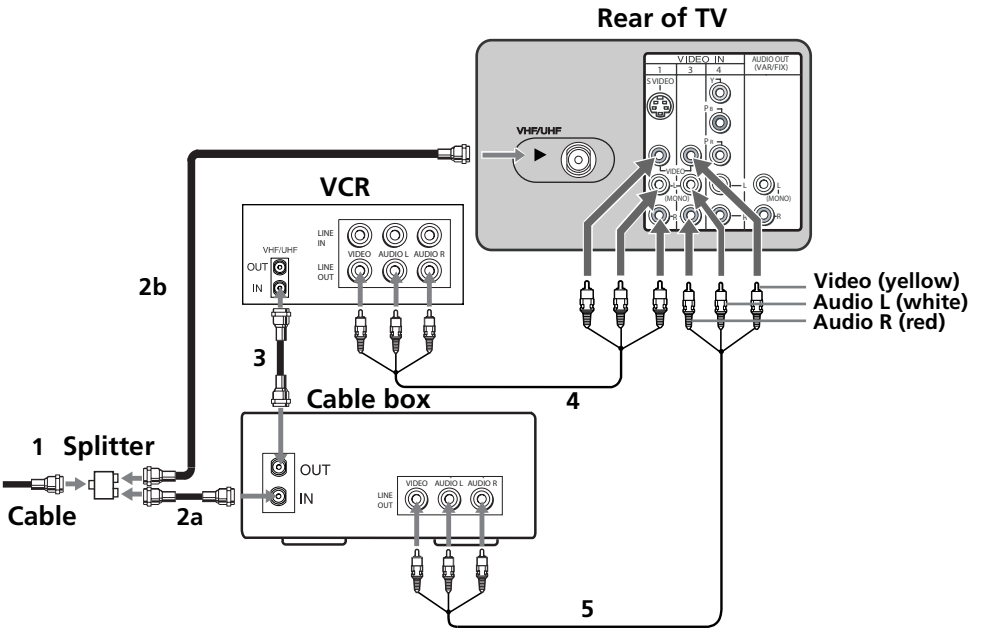
- Program your Sony remote control to operate your cable box (see page 5).
- To activate your remote press SAT/CABLE (FUNCTION button) to operate your cable box and then use the 0-9 buttons or CH+/- buttons to change the channels. In order to do this, first program your remote control, then use the Channel Fix feature to set your TV to channel 3 or 4 (see page 31).

Connecting a TV, VCR, and Cable Box

✍ DIGITAL CABLE BOX USERS: If you are connecting a digital cable box, you will need a special bi-directional splitter (5-900 Mhz mininum) that is designed to work with your digital cable box.

Use this connection if you subscribe to a cable system that scrambles some channels (pay channels), but not all of them. This setup allows you to:

- ❏ change channels through your cable box or VCR when you are receiving a scrambled signal
- ❏ change channels through your TV



1 Connect the single input jack of the splitter (not supplied) to your incoming cable connection.

2 Using coaxial cables (not supplied), connect the two output jacks of the splitter (not supplied) to:

a) the IN jack on your cable box

b) the VHF/UHF jack on the TV

3 Using a coaxial cable (not supplied), connect the OUT jack on your cable box to the IN jack on your VCR.

4 Using the audio/video cables (not supplied), connect the AUDIO VIDEO OUT on your VCR to the AUDIO/VIDEO IN on your TV.

5 Using the audio/video cables (not supplied), connect the AUDIO VIDEO OUT on your cable box to the AUDIO/VIDEO IN on your TV.

Optional connection

❏ For better picture quality, use S VIDEO instead of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.

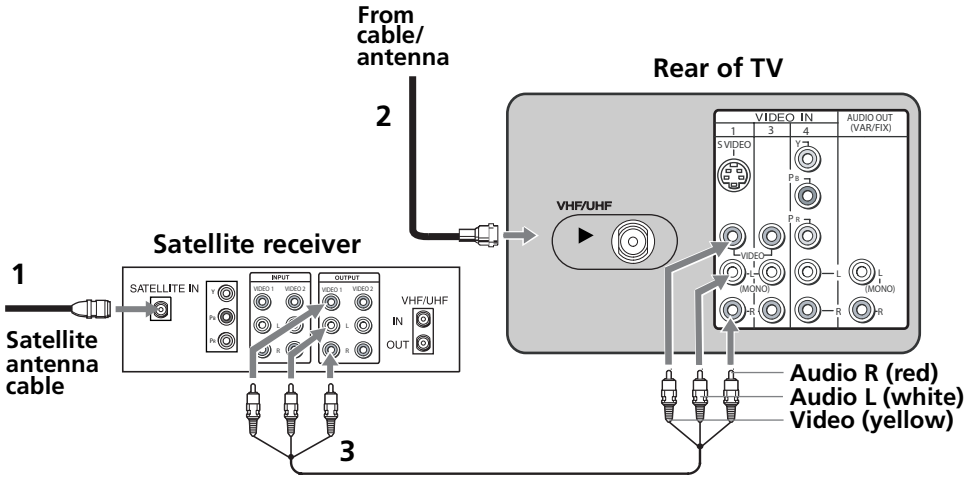
Using your TV with this connection

❏ Program your Sony remote control to operate your VCR or cable box (see page 5).

❏ To activate your remote, press VCR/DVD (FUNCTION button) to operate your VCR or SAT/CABLE (FUNCTION button) to operate your cable box. To do this, first program your remote control, then use the Channel Fix feature to set your TV to channel 3 or 4 (see page 31).

❏ Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input), VHF/UHF (local channels or unscrambled), or cable box (cable system or scrambled channels).

Connecting a TV and Satellite Receiver



1 Connect the cable from your satellite antenna to SATELLITE IN on your satellite receiver.

2 Connect the coaxial cable from your cable service or antenna to the VHF/UHF jack on your TV.

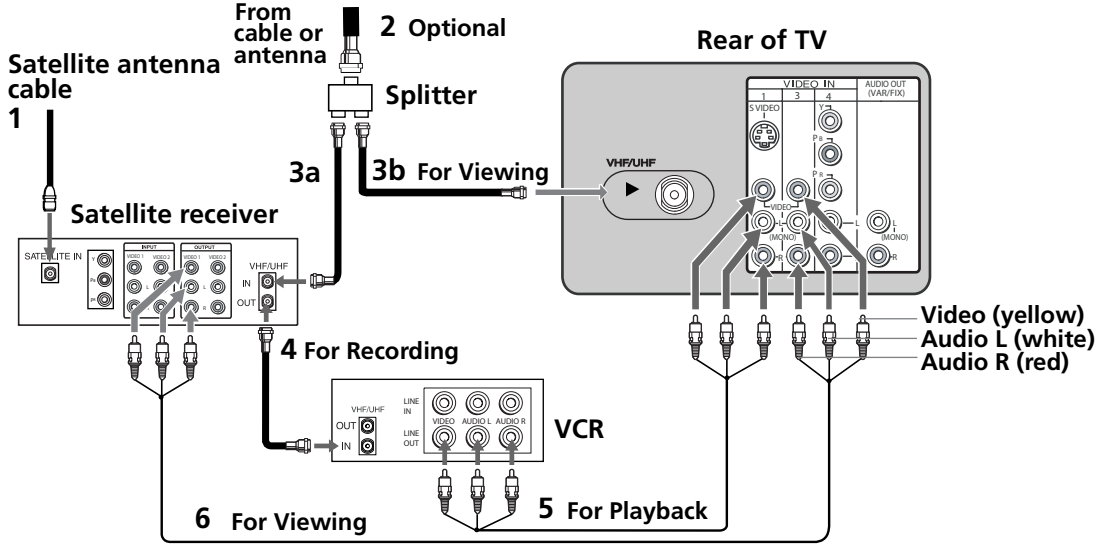
3 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your satellite receiver to AUDIO/VIDEO IN on your TV.

Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your satellite receiver (see page 5).
- ❏ To activate your remote, press SAT/CABLE (FUNCTION button) to operate your satellite receiver. See page 7 on how to operate other functions.
- ❏ Press TV/VIDEO repeatedly to switch to satellite receiver input (VIDEO input).

Connecting a TV, VCR, Cable/Antenna, and Satellite Receiver using Composite Video (VIDEO/AUDIO L(MONO), R)



1 Connect the cable from your satellite antenna to SATELLITE IN on your satellite receiver.

2 Connect the single input jack of the splitter (not supplied) to your incoming cable/antenna (optional connection to view local channels or broadcast).

3 Using coaxial cables (not supplied), connect the two output jacks of the splitter (not supplied) to:

a) the IN jack on your satellite receiver

b) the VHF/UHF jack on the TV

4 Using a coaxial cable (not supplied), connect the OUT jack on your satellite receiver to the VHF/UHF IN on your VCR.

5 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your VCR to the AUDIO/VIDEO IN on your TV.

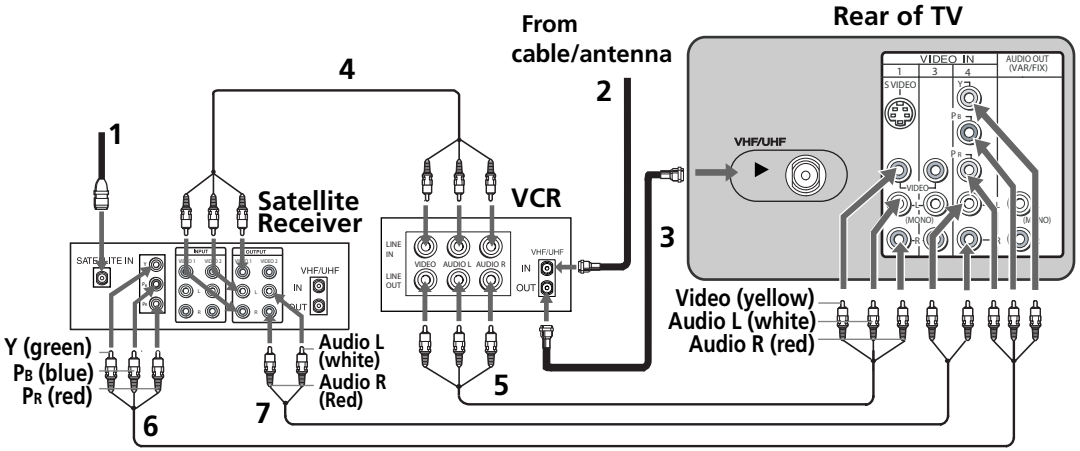
6 Using audio/video cables (not supplied), connect the AUDIO/VIDEO OUT on your satellite receiver to the AUDIO/VIDEO IN on your TV.

Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your VCR or satellite receiver (see page 5).
- ❏ To activate your remote, press VCR/DVD (FUNCTION button) to operate your VCR or SAT/CABLE (FUNCTION button) to operate your satellite receiver.
- ❏ Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input), VHF/UHF (local channels or unscrambled), or your cable box (cable system or scrambled channels).

Connecting a TV, VCR, and Satellite Receiver using Component Video (Y, P_B, P_R)



1 Connect the coaxial cable from your satellite antenna to SATELLITE IN on the satellite receiver.

2 Connect the coaxial cable from your cable service or antenna to the IN jack on your VCR.

3 Using a coaxial cables (not supplied), connect the OUT jack on your VCR to the VHF/UHF jack on your TV.

4 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your satellite receiver to AUDIO/VIDEO IN on your VCR.

5 Using audio/video cables (not supplied), connect the AUDIO/VIDEO OUT on your VCR to AUDIO/VIDEO IN on your TV.

6 Using component video cables (not supplied), connect the Y, P_B, P_R OUT on your satellite receiver to Y, P_B, P_R IN on your TV.

7 Connect AUDIO OUT on your satellite receiver to AUDIO IN on your TV.

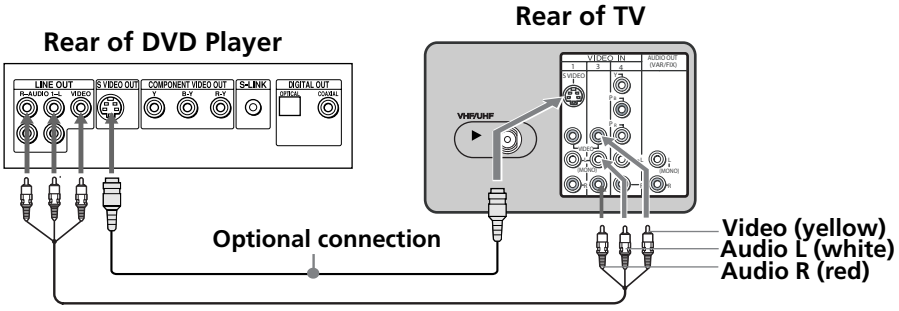
Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your VCR or satellite receiver (see page 5).
- ❏ Turn on your VCR to enable your satellite receiver to work with this connection.
- ❏ To activate your remote, press VCR/DVD (FUNCTION button) to operate your VCR or SAT/CABLE (FUNCTION button) to operate your satellite receiver.
- ❏ Press TV/VIDEO repeatedly to switch between VCR input (VIDEO input), VHF/UHF (local channels or unscrambled), or your cable box (cable system or scrambled channels).

Connecting a DVD Player using Composite Video (VIDEO/AUDIO L(MONO),R)

Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your DVD player to AUDIO/VIDEO IN on your TV.

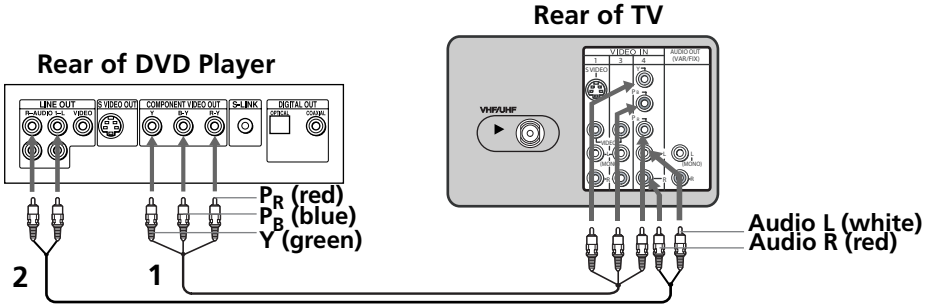


Optional connection

❏ For better picture quality, use S VIDEO instead of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.

Connecting a DVD Player using Component Video (Y, P_B, P_R/R, L)

If your DVD player is equipped with component video outputs (Y, P_B, P_R), you can improve the picture quality by using component video cables (480i only).



1 Using component video cables (not supplied), connect the Y, P_B, P_R OUT on your DVD player to Y, P_B, P_R IN on your TV.

2 Connect AUDIO OUT on your DVD player to AUDIO IN on your TV.

✍ The Y, P_B, P_R outputs on your DVD player are sometimes labeled Y, C_B, and C_R or Y, B-Y, and R-Y. If so, connect the cables to like colors.

Using your TV with this connection

This connection allows you to do the following:

❏ Program your Sony remote control to operate your DVD (see page 5).

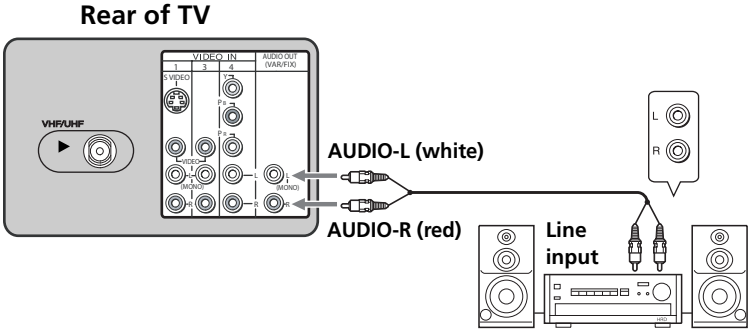
❏ To activate your remote, press VCR/DVD (FUNCTION button) to operate your DVD (see page 7).

❏ Press TV/VIDEO repeatedly to switch to the DVD player's input (VIDEO input).

Connecting an Audio System

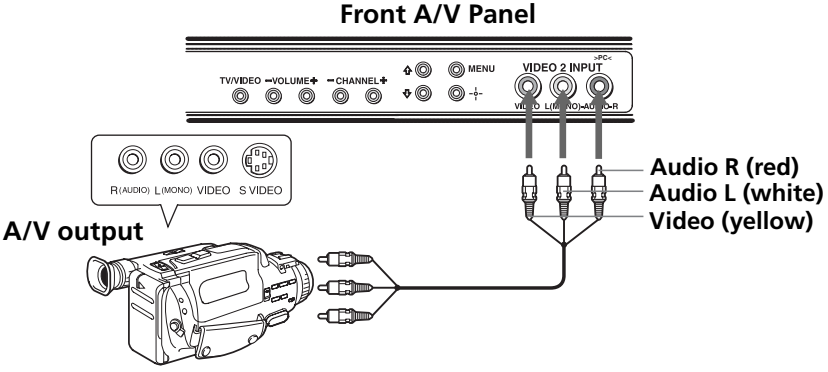
✍ If you are connecting a Home Theater, please refer to your Home Theater manual for additional connections.

1. Using audio/video cables (not supplied), connect AUDIO OUT on your TV to one of the unused line inputs (e.g. TV, AUX, TAPE2) on your stereo.
2. Set the Speaker option to Off. For more instructions, see "Using the Audio Menu" on page 29.
3. After you connect the audio system, you can control the volume level from your TV or audio system.
   - ❏ To control the volume from the TV, use the front panel controls or the VOL +/- buttons on the remote.
   - ❏ To control the volume through the connected audio system, open the Audio Out option on the Audio Menu and select Fixed. For more instructions, see "Using the Audio Menu" on page 29.



Connecting a Camcorder (for playback)

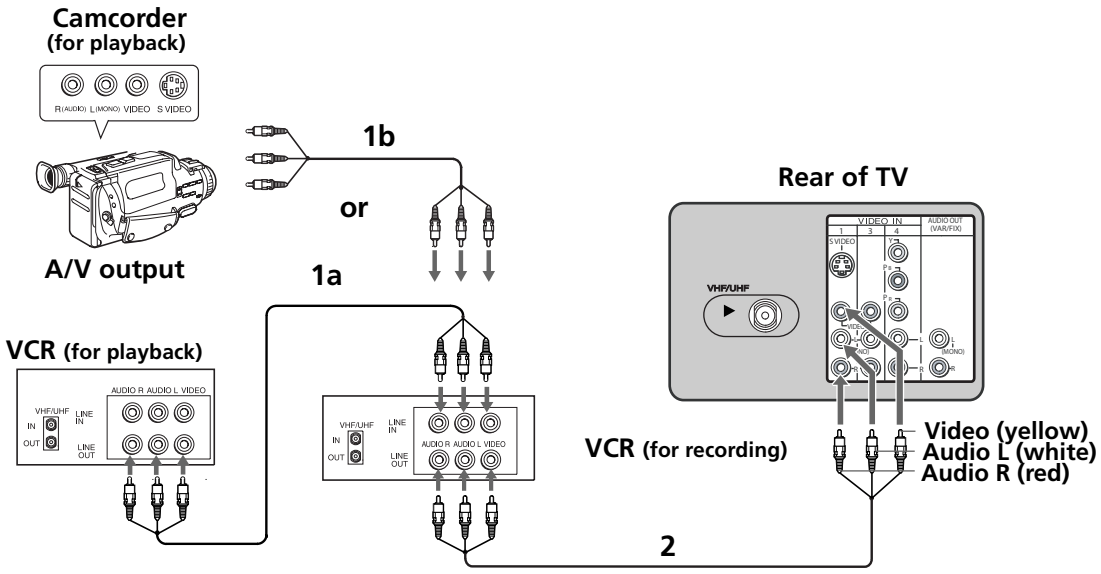
To connect your camcorder, you can use the Audio/Video inputs on either the front or rear panel of the TV. Using the audio/video cables (not supplied), connect the AUDIO/VIDEO OUT on your camcorder to the AUDIO/VIDEO IN on your TV.



Optional connection

- ❏ For better picture quality, use S VIDEO instead of the yellow video cable. S VIDEO does not provide sound, so you still must connect the audio cables.

Connecting for Video Tape Editing (VCR and Camcorder)



1 For video tape editing connect to the VCR the following sources (VCR or Camcorder):

- ❏ Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on your first VCR to AUDIO/VIDEO IN on your second VCR (option 1a)
- ❏ Using audio/video cables (not supplied), connect the AUDIO/VIDEO OUT on your Camcorder to the AUDIO/VIDEO IN on your second VCR (option 1b)

2 Using audio/video cables (not supplied), connect AUDIO/VIDEO OUT on the second VCR to the AUDIO/VIDEO IN on your TV.

Using your TV with this connection

This connection allows you to do the following:

- ❏ Program your Sony remote control to operate your VCR (see page 5).
- ❏ To activate your remote, press VCR/DVD (FUNCTION button) to operate your VCR, see page 7 on how to operate other functions.

Using Basic Functions

Setting Up the TV

After you have finished connecting your TV, you can use Auto Program to set up your channels. During Auto Program, the TV will automatically search for available channels and program receivable channels.

✍ When you start Auto Program wait until it is finished; otherwise it will skip over channels that are available. Perform Auto Program again to program receivable channels.

1 Press POWER to turn on the TV. The Initial Setup screen appears.

2 Press CH + on the remote control or on the TV front panel to start Auto Program, or press CH – to exit.

✍ The Initial Setup screen appears each time you turn on the TV until you perform Auto Program.

To perform Auto Program again

1 Press MENU.

2 Press → to highlight Channel Menu.

3 Press ↓ to highlight Cable. Press ⊕ to select.

4 Press ↑ or ↓ to highlight On or Off according to how you connected your TV. Press ⊕ to select.

5 Press ↓ to highlight Auto Program. Press ⊕ to search for channels.

6 After Auto Program finishes, press MENU to exit.

To reset the TV to factory settings

1 Turn the TV on.

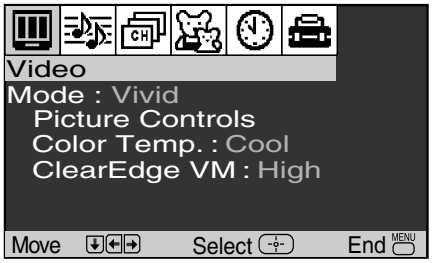
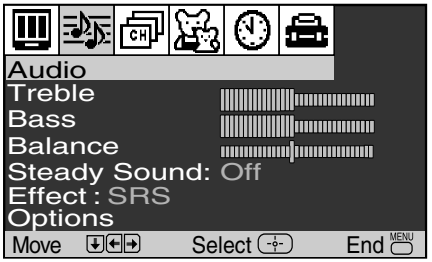
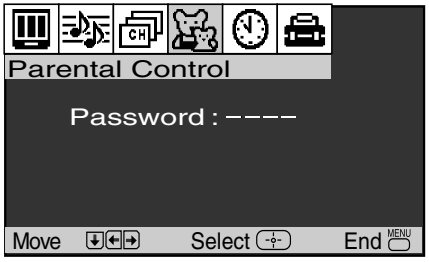
2 Hold down RESET on the remote control.

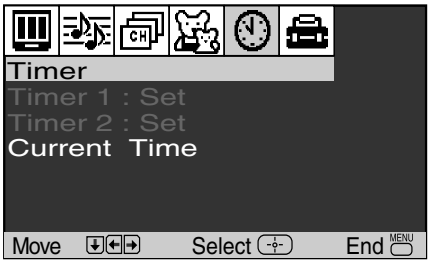
3 Press and release the POWER button on the TV front panel. The TV will turn itself off, then back on.

4 Release RESET.

Quick Start to the Menus

The following settings are available in your on-screen menus. For more details on how to use the menus, see "Using the Menus" on page 27.

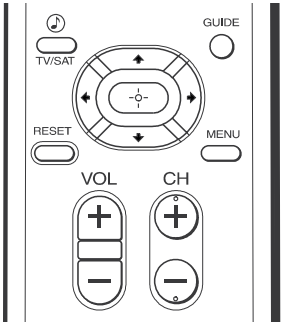
Menu	Allows you to
	Adjust your picture settings.
	Change your audio settings.
	Customize your channel settings.
	Set rating limits on your TV based on program rating or content.

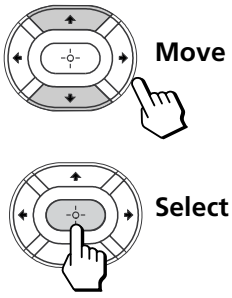
Menu	Allows you to
	Set the clock on your TV and program scheduled viewing using Timer 1 and Timer 2.
	Select closed captioning options, display the name of the current program and its remaining time (Info Banner), label video inputs, adjust tilt correction, enhance your DVD picture resolution (16:9 Enhanced) or select menu language.

Using the Menus

This section shows the options available for setting up and adjusting the TV.

Using the Remote Control to Navigate on the On-Screen Menus





To navigate on the on-screen menus, use the "arrow" buttons (⇧ , ⇩ , ⇦ , ⇨) to move the cursor. Pressing these arrows will cause the cursor to move in the corresponding direction. Pressing center button (⊕) will allow you to select an option.

How to Access Menus

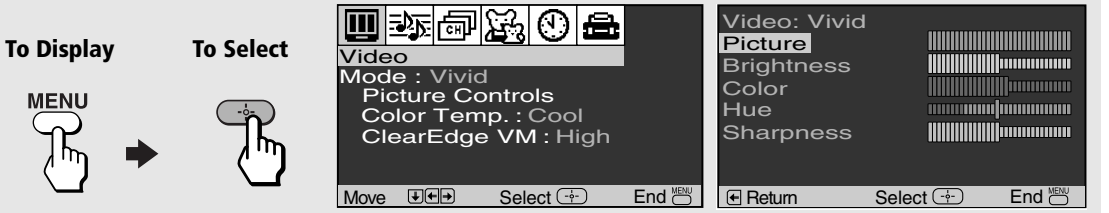
To Access Menus

1. Press MENU to display the on-screen menu.
2. Use the ⇦ or ⇨ buttons to highlight the desired menu icon. Press ⊕ to select it.
3. Use the ⇧ or ⇩ buttons to scroll up and down through the features.
4. Follow the instructions on the screen.
5. For instructions on using a specific menu, see the page in this section that talks about that menu.
6. Press MENU to exit the menu.

✍ Press MENU once to display the on-screen menu, and press again to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 90 seconds.

Using the Video Menu

To access the Video menu, use the following steps:



Press ⇩ to highlight an option; then press ⊕.

Mode
Customized picture viewing

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

- **Vivid:** Select for enhanced picture contrast and sharpness.
- **Standard:** Select for a standard picture.
- **Movie:** Select for a finely detailed picture.
- **Pro:** Select for natural picture and sharpness.

✍ Press PICTURE MODE on the remote control for direct access to the picture modes (Vivid, Standard, Movie, Pro).

Picture Control

With the Picture Controls menu open, press ⇧ or ⇩ to select one of the following option:

- **Picture:** Press ⇦ to decrease the contrast. Press ⇨ to increase contrast.
- **Brightness:** Press ⇦ to darken the picture. Press ⇨ to brighten the picture.
- **Color:** Press ⇦ to decrease color saturation. Press ⇨ to increase color saturation.
- **Hue:** Press ⇦ to increase the red tones. Press ⇨ to increase the green tones.
- **Sharpness:** Press ⇦ to soften the picture. Press ⇨ to sharpen the picture.

Color Temp.
White color tint adjustment

Use the ⇧ or ⇩ buttons to select from one of the following options:

- **Cool:** Gives the white colors a blue tint.
- **Neutral:** Gives the white colors a neutral tint.
- **Warm:** Gives the white colors a red tint.

ClearEdge VM

Sharpens picture definition to give objects a crisp edge. Use the ⇧ or ⇩ buttons to highlight of the following options: **High**, **Low**, **Off;** then press to ⊕ select it.

Using the Audio Menu

To access the Audio menu, use the following steps:

Press ⇩ to highlight an option; then press ⊕.

Treble	Press ⇦ to decrease the higher pitched sounds. Press ⇨ to increase the higher pitched sounds.
Bass	Press ⇦ to decrease the lower pitched sounds. Press ⇨ to increase the lower pitched sounds.
Balance	Press ⇦ to emphasize the left speaker. Press ⇨ to emphasize the right speaker.
Steady Sound *Stabilizes volume*	Press ⇧ or ⇩ to select one of the following options: **On:** Select to stabilize the volume when changing channels. **Off:** Select to turn Steady Sound off.
Effect	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it. **Simulated:** Simulates theater quality sound for mono programs. **SRS:** Produces a dynamic three-dimensional sound for stereo programs. **Off:** Normal stereo or mono reception.

✍ Press TV/SAT to directly select Effect settings (Simulated, SRS, Off).

Options	Use these features to change your Audio setting.	
	MTS *Multi-Channel TV Sound*	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it. **Stereo:** Select when viewing a broadcast in stereo. **Auto SAP:** Select to have the TV automatically switch to a Second Audio Program (SAP) when a signal is received. **Mono:** Select to reduce noise in areas of poor reception.
	Speaker *Custom selection of audio output source*	Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it. **On:** Select to listen to the sound from the TV speakers with or without a separate stereo system. **Off:** Select to turn off the TV speakers and listen to the TV's sound only through external audio system speakers.

Audio Out
Use to control the TV's volume through a stereo

Use the ⇧ or ⇩ buttons to highlight one of the following options, then press ⊕ to select it.

Variable: Adjust the volume through your TV.

Fixed: Adjust the volume through a connected stereo.

✍ Press MTS/SAP to directly select MTS settings (Stereo, Auto SAP, Mono).

✍ If your TV is set to Auto SAP, some programs may be muted or distorted. If your TV does not output sound, change your Audio MTS setting to Stereo or Mono.

✍ You can only set Audio Out settings when you have set Speaker to Off.

Using the Channel Menu

To access the Channel menu, use the following steps:

Press ⇳ to highlight an option; then press ⊕.

Favorite Channels

Quick access to favorite channels

1. Use the ⇳ or ⇳ buttons to highlight the position (1-8) where you want to set a favorite channel, then press ⊕.
2. Use the ⇳ or ⇳ buttons to find the channel you want to add to your favorite channels.
3. Press ⊕ to select the channel. The TV will automatically change to the selected channel.
4. Press ⇦ to return to the Channel menu or press MENU to exit.

✍ To use Favorite Channels, exit all menus and press ⊕. Press ⇳ or ⇳ to move the cursor to the desired channel number and press ⊕.

Cable

Use the ⇳ or ⇳ buttons to highlight one of the following options, then press ⊕ to select it.

On: Select if you are receiving cable channels with a CATV cable.

Off: Select if you are using a TV antenna.

✍ After changing your cable settings, you will need to perform Auto Program. See "To perform Auto Program again" on page 23.

Channel Fix

Use the ⇳ or ⇳ buttons to highlight one of the following options, then press ⊕ to select it.

Off: Channel Fix is not set.

2-6: Select when you want to control all channel selection through a cable box or VCR. Select the appropriate channel (usually 3 or 4) and use the cable box's or VCR's remote control for channel selection.

Video 1: Select from available video inputs when you have connected video equipment (e.g., a satellite receiver) and you want your TV fixed to it.

Auto Program

Perform Auto Program whenever setting up your TV.
Auto Program will search for available channels and program receivable channels.

Channel Skip/Add

Use this feature after you run Auto Program to skip unwanted channels or add new ones.

1. Use the ⇧ or ⇩ buttons to highlight the position of the desired channel, then press ⊕.
2. Use the ⇧ or ⇩ buttons to highlight **Skip** or **Add,** then press ⊕.
3. Press ⇦ to return to the Channel menu or press MENU to exit.

✍ Press CH + or CH - to skip over channels that have been skipped. You can still use the ⓪-⑨ buttons to directly tune to skipped channels.

Channel Label

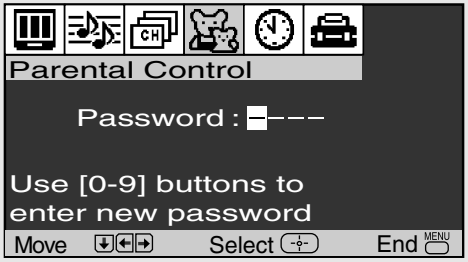
Label up to 40 channels with their call letters

1. Press ⊕, then use the ⇧ or ⇩ buttons until you reach the desired channel number.
2. Press ⊕ to activate the channel.
3. Press ⇩ to highlight **Label**, then press ⊕. Use the ⇧ or ⇩ buttons to display the first call letter or number of the label. Press ⊕ to select. Repeat this process until you finish selecting all the call letters.
4. When finished, press ⊕ to activate.
5. Press ⇦ to return to the Channel menu or press MENU to exit.

✍ You cannot use Favorite Channels, Cable, Channel Skip/Add, or Channel Label when Channel Fix is set.

Using the Parent Menu

To access the Parent menu, use the following steps:



The Parental Control feature helps parents monitor what their children watch on television.

To use the Parent Menu

When you select the Parent menu, you are prompted to set a 4-digit password. You cannot access the Parent menu settings without this password.

1. Use the ⓪-⑨ buttons to enter a 4-digit password.
2. Confirm your password by entering it again.

✍ Keep this manual in a safe place. You need your password for any future access to the Parent menu. If you forget your password, see page 41.

Parental Control

Setting the Rating

You can change the Rating by selecting one of the Parental Lock options.

1 Press ⇩ to highlight **Parental Lock,** then press ⊕.

If you are not familiar with Parental Guideline rating system, use one of the following preset categories to simplify the rating selection: Child, Youth, Young Adult.

2 Use the ⇧ or ⇩ to highlight the desired rating and press ⊕.

Rating	TV will allow a maximum rating of
Off	No rating limit
Child	TV-Y, TV-G, G (U.S.), G, C (Canada)
Youth	TV-PG, PG (U.S.), 8 ans + (Canada)
Young Adult	TV-14, PG-13 (U.S.), 14+ (Canada)
Custom	Select to set more restrictive ratings (see next section)

Changing your Password

1 Use the ⇧ or ⇩ buttons to highlight **Change Password** and press ⊕.

2 Follow steps 1 and 2 for "Using the Parent Menu" on page 33.

Select a Country

Select U.S.A. to use US ratings (see pages 36-37) or select Canada to use Canadian ratings (see page 38). If you select a Country (U.S.A. or Canada) that is not where you live, the rating you select will not be activated.

1 Press ⇩ to highlight **Country**, then press ⊕.

2 Use the ⇧ or ⇩ to highlight the desired country and press ⊕.

Information for Parents

To view a program that exceeds the TV rating

❑ Press ENTER, then use the 0-9 buttons to enter your password.

✍ Entering your password to view a blocked program will temporarily turn **Parental Lock** to Off. To reactivate your Lock settings, turn the TV off then back on; the TV will return to the settings that you have selected.

Using the Custom Menu

Follow the instructions on the screen to make your custom settings. Select the country desired for your TV's rating limit. See page 36 for U.S. models and page 38 for Canadian models for more information.

✍ Once you have blocked a rating or content, all higher ratings or content will be automatically blocked.

United States: Selecting Custom Rating Options

For the United States, the Custom Rating menu includes the following options: Movie Rating, TV Rating and Unrated. (For Canada, see page 38.)

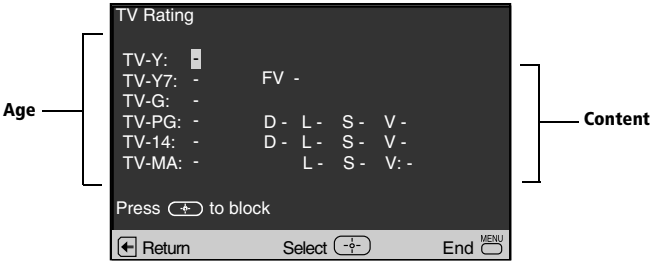
Movie Rating

This system defines the rating levels of movies shown in theaters and on prime cable channels.

Rating	Defined as
G	General audience
PG	Parental guidance suggested
PG-13	Parents strongly cautioned
R	Restricted
NC-17	No one 17 and under admitted
X	Adult audience only

TV Rating

The TV rating is divided into two groups: age-based and content-based.



Age	Defined as
TV-Y	All children
TV-Y7	Directed to older children
TV-G	General audience
TV-PG	Parental guidance suggested
TV-14	Parents strongly cautioned
TV-MA	Mature audience only

Content	Defined as
FV	Fantasy violence
D	Suggestive dialogue
L	Strong language
S	Sexual situations
V	Violence

✍ The content ratings will increase depending on the level of the age-based rating. For example, a program with a TV-PG V (Violence) rating may contain moderate violence, while a TV-14 V (Violence) rating may contain intense violence.

Unrated

You have the option of blocking TV programs or movies that are not rated.

Allow	Allows all unrated programs
Block	Blocks all unrated programs

✍ If you choose to block unrated TV programs, please be aware that the following programs may be blocked: emergency broadcasts, political programs, pro, news, public service announcements, religious programs, and weather.

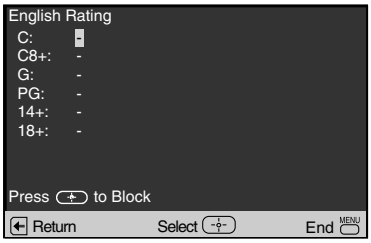
Canada: Selecting Custom Rating Options

For Canada, the Custom Rating menu includes the following options: English Rating, French Rating, and U.S.A. Rating.

English Rating

These ratings are for Canadian programs that are broadcast in English.

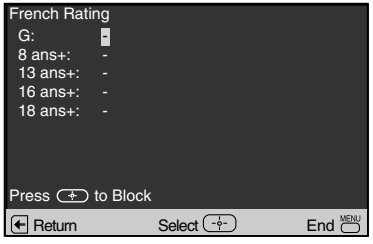
Rating	Defined as
C	Children
C8+	Children 8 years and older
G	General programming
PG	Parental guidance
14+	Viewers 14 and older
18+	Adult programming



French Rating

These ratings are for Canadian programs that are broadcast in French.

Rating	Defined as
G	General
8 ans+	Not recommended for younger children
13 ans+	Not recommended for children under age 13
16 ans+	Not recommended for ages under 16
18 ans+	This program is restricted to adults

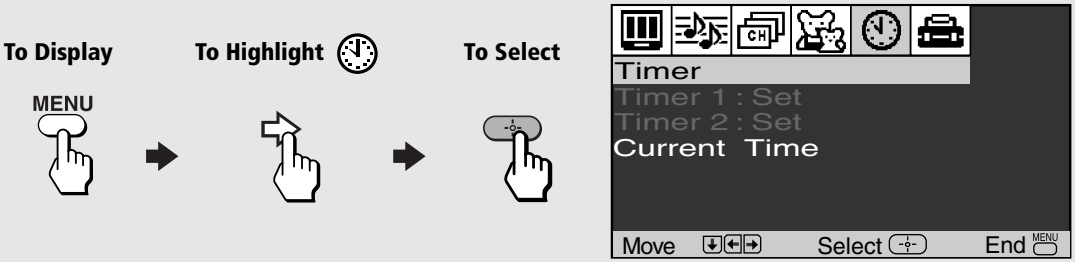


U.S.A. Rating

For programs from the United States, see "TV Rating" on page 36.

Using the Timer Menu

To access the Timer menu, use the following steps:



Current Time

Set your TV to the current day and time. Press ⊕ to open the Current Time menu:

1. Use the ⇧ or ⇩ buttons to enter the correct day and time, then press ⊕.
2. Press MENU to exit the menu.

✍ You must set the Current Time before you can use Timer 1 or Timer 2.

Timer 1 and Timer 2

Scheduled viewing

Use the timers to program your TV to turn on and off by day, time, duration, and channel. The timer duration is a maximum of six hours. When the channel is fixed, it is not necessary to set the channel.

1. Use the ⇧ or ⇩ buttons to highlight **Timer 1** or **Timer 2**, then press ⊕.
2. Use the ⇧ or ⇩ buttons to enter the desired day, start time, duration, and channel, then press ⊕. The timer status should be On when the Timer has been set, and the timer light on the front panel of the TV should be on.
3. Press MENU to exit the menu.

✍ Select Off to turn off the Timer. Your previous settings will be saved.

✍ When you perform Auto Program, Timer 1 and Timer 2 settings will be cleared. Also, in the event of any loss of power, Current Time, Timer 1, and Timer 2 settings will be cleared.

Using the Setup Menu

To access the Setup menu, use the following steps:

Press ⇳ to highlight an option; then press ⊕.

Caption Vision *Closed-Captioning*	Allows you to select from three closed caption modes for programs that are broadcast with closed captioning. Use the ⇧ or ⇳ buttons to highlight one of the following options, then press ⊕ to select it. **Off:** Caption Vision is not activated. **CC1, 2, 3, 4:** Displays printed dialogue and sound effects of a program. **Text1, 2, 3, 4:** Displays network/station information.
Info Banner	Displays the name of the current program and its remaining time (if available) when you change the channel or press the DISPLAY button. Use the ⇧ or ⇳ buttons to highlight one of the following options: **On, Off.** Then press ⊕.
Video Label *Label connected equipment*	Allows you to identify the video components connected to the TV: VHS, DVD, etc. When you press TV/VIDEO to switch inputs, the Video Label appears on-screen. **1** Press the ⇧ or ⇳ buttons to highlight the input you want to label and press ⊕. **2** Press the ⇧ or ⇳ buttons to highlight a label and press ⊕. **3** Press ⇦ to return to the Setup menu or press MENU to exit.
Tilt Correction	Use the ⇧ or ⇳ buttons to set the tilt of the picture from –5 to +5, then press ⊕ to activate.
Language	Display all menus in the language of your choice. Use the ⇧ or ⇳ buttons to select from one of the following options: **English, Español** (Spanish) and **Français** (French). Then press ⊕.
16:9 Enhanced	Provides enhanced picture resolution for wide-screen sources such as DVD. This is only available when the TV is in Video mode.

Other Information

Troubleshooting

If you have a problem with your TV, try the suggestions below. If the problem persists, see "Contacting Sony" at the end of this section.

General

Problem	Possible Remedies
I want to reset the TV to the factory settings	❑ Turn on the TV. While holding down RESET on the remote control, press POWER button on the TV front panel. The TV will turn itself off, then back on again. Release RESET.
The TV is dirty	❑ Clean the TV with a soft dry cloth. Never use strong solvents such as thinner or benzine, which might damage the finish of the cabinet.
I lost the parental control password	❑ In the password screen, enter the following master password: 4357. After using the master password, you must create a new password. You cannot use the master to unlock currently blocked channels.
There is a black box on the screen	❑ You have selected a text option in the Setup menu (page 40) and no text is available. To turn off this feature, select Off in the Caption Vision option. If you were trying to select closed captioning, select CC1-4 instead of Text1-4.
There was a blackout or power outage, and now the TV won't turn on and the timer LED is flashing	❑ Press the POWER button on your remote control or on the TV front panel.
Digital cable box does not work	❑ Be sure that you have not connected the digital cable box to the TV's TO CONVERTER jack. This jack is not compatible with digital cable boxes. ❑ If you are connecting a VCR and digital cable box using a splitter, as described in page 14, you must use a special bi-directional splitter (5~900MHz minimum) that is designed to work with your digital cable box.

Remote Control

Problem	Possible Remedies
I cannot operate the remote control	❏ Press TV (FUNCTION) when operating your TV. ❏ Check the orientation of the batteries. ❏ Batteries could be weak. Replace them (page 2). ❏ Move the TV three to four feet away from fluorescent lights.
I cannot change channels with the remote control	❏ Make sure you have not inadvertently switched your TV from the channel 3 or 4 setting if you are using another device to change channels. ❏ If you are using another device to control channels, be sure that you have pressed the FUNCTION button for that device. For example, if you are using your VCR to control channels, be sure to press the VCR/DVD FUNCTION button (page 4).
I lost the remote control	❏ You can use the front panel controls to access your menus, change channels, adjust the volume, or change video inputs (page 2). Contact your nearest Sony Dealer to order a replacement, please call our Sony Direct Accessory and Part Center at 1-800-488-7669 (U.S. residents only).

Programming the Remote Control

Problem	Possible Remedies
More than one code is listed	❏ Try entering them one by one until you come to the correct code for your component.
I entered the wrong code number	❏ If you enter a new code number, the code number you previously entered at that setting is erased.
I cannot operate a component with the remote control	❏ Use the component's own remote control.
When I changed the batteries, the code numbers changed back to the factory settings	❏ You must reprogram the remote control (page 5).

Video

Problem	Possible Remedies
No picture, no sound	❏ Make sure the power cord is plugged in. ❏ If a red light is flashing on the front of your TV for more than a few minutes, disconnect and reconnect the power cord. If the problem continues, call your local service center. ❏ Check the TV/VIDEO setting: when watching TV, set it to TV; when watching video equipment, set it to VIDEO 1, 2, 3 or 4 (page 4). ❏ Try another channel to rule out station trouble.
Poor or no picture, good sound	❏ Adjust the **Picture** setting in the Video menu (page 28). ❏ Adjust the **Brightness** setting in the Video menu (page 28). ❏ Check the antenna and/or cable connections (page 11).
No color	❏ Adjust the **Color** setting in the Video menu (page 28).
Only snow appears on the screen	❏ Check the **Cable** setting in the Channel menu (page 31). ❏ Check the antenna and/or cable connections (page 11). ❏ Make sure the channel selected is currently broadcasting.
Dotted lines or stripes	❏ Adjust the antenna. ❏ Move the TV away from other electronic equipment. Some electronic equipment creates electrical noise, which can interfere with TV reception.
Double images or ghosts	❏ Check your outdoor antenna or call your cable service.

Audio

Problem	Possible Remedies
Good picture, no sound	❏ Press MUTING so that Muting disappears from the screen (page 3). ❏ Check your Audio settings. Your TV may be set to Auto SAP in the MTS feature (page 29). ❏ Make sure the speaker option is set to On in the Audio Menu. ❏ Adjust TV's volume.
Low or no audio (TV and Cable box)	❏ Some cable boxes have volume level controls. Check and see if your cable box or cable box remote has a volume control.

Channels

Problem	Possible Remedies
I cannot receive higher number channels (UHF) when using an antenna	❑ Make sure **Cable** is set to Off in the Channel menu (page 31). ❑ Perform Auto Program to add channels that are not presently in the memory (page 23).
Cable stations don't seem to work	❑ Make sure **Cable** is set to On in the Channel menu (page 31). ❑ Perform Auto Program to add channels that are not presently in the memory (page 23).

Contacting Sony

Before calling our Customer Information Services Center, reset the TV to factory settings (see page 23). Please have your TV serial number ready. The number is located on the rear of your TV and on the front cover of this manual.

Our Customer Information Services Center phone number is 1-877-899-SONY (7669) (US residents only) or (416) 499-SONY (7669) (Canadian residents only).

Specifications

Television system	American TV standard/NTSC			
Channel coverage	VHF: 2-13/UHF: 14-69/CATV: 1-125			
Antenna	75-ohm external antenna terminal for VHF/UHF			
Picture tube	FD Trinitron® tube			
Power requirements	120V, 60 Hz			
Supplied accessories	Size AA (R6) batteries (2) Remote Control RM-Y195			
Optional accessories	TV Stand: SU-27FS2			
KV-27FS120				
Screen size	Visible screen size: 679 mm (27 inches) measured diagonally Actual screen size: 736.6 mm (29 inches) measured diagonally			
Inputs/outputs	Inputs	1 video, 1 audio (front) 2 video, 2 audio (rear) 1 S VIDEO 1 RF 1 Y, PB, PR, 1 audio	Outputs	1 AUDIO OUT
Speaker output	10 W x 2			
Power consumption	180 W in use less than 1 W in standby			
Dimensions (W/H/D)	768 x 589 x 497 mm (30 1/4 x 23 1/4 x 19 5/8 inches)			
Mass	45.2 kg (99 lbs. 10 oz)			

Design and specifications are subject to change without notice.

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Sony Corporation

http://www.sony.net

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